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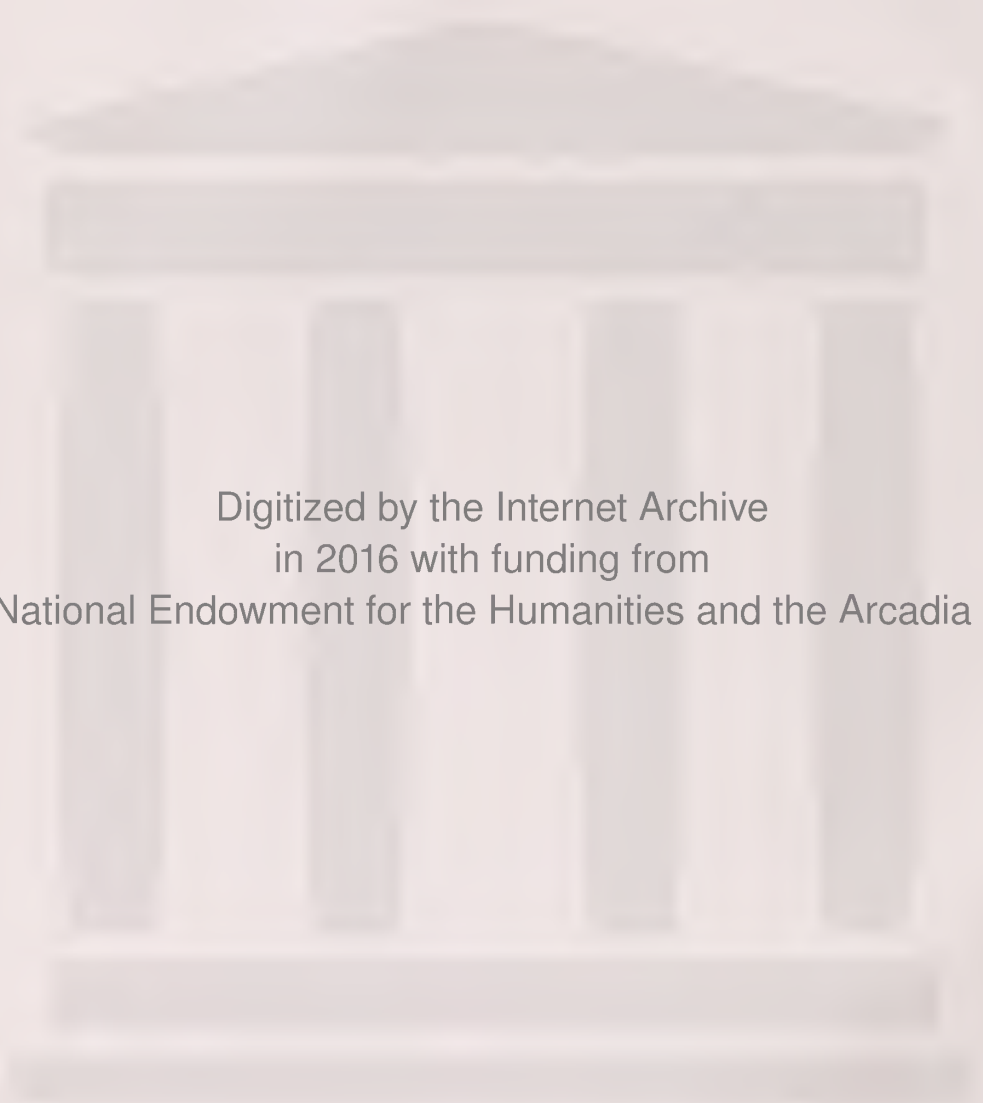
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# THE RHODE ISLAND MEDICAL JOURNAL



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The Colon as a Focus of Infection. Frank Anthony Cummings, M.D.

The Rhinological Treatment of Asthma. Jay N. Fishbein, M.D.

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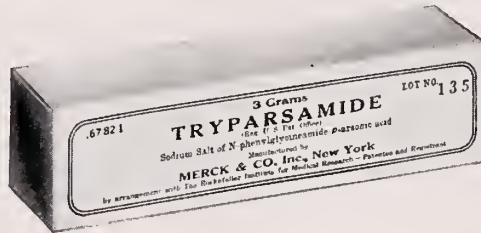
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## ORIGINAL ARTICLES

### THE COLON AS A FOCUS OF INFECTION\*

By FRANK ANTHONY CUMMINGS, M.D.

169 ANGELL ST., PROVIDENCE, R. I.

The colon is one of the enigmas of medicine and, to cover the subject in a complete way, would require a book. You will pardon me, therefore, if I but touch the high spots as I have seen them in years of practice and also as gathered from the observations and laboratory work of others.

For purposes of study, the colon may be divided into the absorptive portion, consisting of the cecum, ascending and transverse sections, and the expulsive portion, made up of the descending section, the sigmoid and rectum. Both portions together may vary from three to five feet in length. The smallest, lumen, is in the sigmoid and the widest in the ascending section, and, separating the cecum from the small intestine, is the ileo-cecal valve, the only one-way valve in the gastro-intestinal tract.

The right colon drains into the portal circulation, which point is important when diseases of the liver and gall bladder are considered. In part, also, the colon empties into the hemorrhoidal veins, thence to the iliac veins, by which, toxins may be delivered anywhere in the system where tissue resistance is lowered.

The action of the colon depends on the taenia coli, which have the ability to expand as well as to contract. They act as elevators and lift the cecum up the right side, in some cases, according to Reh-fuss,<sup>1</sup> as much as three inches, working somewhat like an accordion. This contraction of the taenia coli forms the haustrations seen on an X-Ray film.

These contractions form the mass movement, described by Reh-fuss,<sup>1</sup> by which the cecum and ascending colon empty their content over to the left side where formation and expulsion of the stool occur.

\*Read before the Providence Medical Association, October 2, 1933.

The final mass movement in expelling the fecal content occurs with the invagination of the sigmoid into the rectum and a second immediate invagination to expel any remaining feces.

These actions are fully described by Alvarez<sup>2</sup> in his theory on intestinal gradients.

Examination of the colon in a patient, who is not too obese, will give information as to tone, mobility, spasticity, tumors, fecal masses and tenderness. Also, much concerning the activity of the colon may be gained by placing a stethoscope over the distal portion of the transverse section and applying pressure over the cecum.

The X-ray is most important in examination and, where possible, should be a routine procedure. Personally, I favor the barium enema first, to be followed a week later by a barium meal, if necessary.

The enema should be small in amount, given under fluoroscopic control, and then, after defecation, air insufflation should be used to bring out details which may be overlooked in the usual type of examination.

The terminal colon may be explored by use of the sigmoidoscope.

Next in order is the examination of the fecal content.

From 25 to 30% of the eliminated stool consists of bacteria, of which about 90% are dead. It may be that somewhere along the distal colon is produced something which kills bacteria. When we learn more about the chemistry of the cell we may know the answer.

I prefer to get a specimen from as high up in the colon as possible, at least from the absorptive portion. This should be examined by a trained laboratory technician. The report should show the state of digestion, evidence of disturbances in the bile function, presence or absence of blood, pus, mucus, indican, etc., and a stained smear will differentiate the bacteria and, if necessary, they may be cultured out.

The exact physiology of the colon is not, by any means, complete. However, we do know that here the absorption of liquids take place—cellulose is broken down by bacteria and the waste products are eliminated. Beyond that we are still in doubt.

Rehfuß<sup>1</sup> in his "Diagnosis and Treatment of Diseases of the Stomach" calls the right side of the colon a bacterial reservoir, and how true this is has been brought out by the writings of such authorities as Case, Kantor, Bassler, Alvarez, and Cannon.

Probably the most common condition, which we are called upon to treat, is colonic stasis, which term I prefer to use in place of constipation.

Most disturbances of function in the digestive tract are due to stasis with the production of epigastric distress, nausea, loss of appetite, belching of gas and, in some cases, delay in emptying the stomach and also duodenal spasm.

When stasis is present, as it is in all cases of disturbances in the gastro-intestinal tract, absorption of bacteria and toxins into the portal circulation and the hemorrhoidal veins follows.

That these bacteria and toxins do escape into the circulation has been shown by Nedzel and Arnold,<sup>3</sup> Deaver,<sup>4</sup> and Judd.<sup>5</sup> David and McGill,<sup>6</sup> reporting on the observations of 55 investigators, said that, in dogs at autopsy, 50% showed Colon Bacilli in the mesenteric glands.

Braithwaite<sup>7</sup> suggests that these toxins and bacteria are carried along the superior mesenteric nodes to those in the lumbar region, thence through the receptaculum chyli to the pyloric region, producing one of the causes of ulcer. Again, you will recall that Moynihan, in his elaborate work on ulcer, speaks pointedly of the relation of the cecum and duodenum.

Observation of the mass movement, mentioned above, under the fluoroscope has been reported by several investigators, but no one has reported the observation of peristalsis as we know it in the caudad direction.

When the colon returns to position after these mass movements we can observe the so called reverse peristalsis seen in X-Ray. If one watches a barium enema given, he is often surprised by the rapidity with which some of the dense mass is carried back to the cecum. At times this is so rapid as to require quick action to follow it. Yet the same patient may require three days to expel the same enema by rectum.

This observation alone should give you some idea of the retention which takes place in the cecum and ascending colon. This retention furnishes an excellent culture media for the growth of bacteria and the formation of toxins, or, in other words, an omnipresent focus of infection.

In the presence of stasis digestion is delayed to a greater or less degree, and, for this reason, one cannot in practice, with any degree of certainty, say how many calories or vitamins may be absorbed in any one day.

A second pathogenic infection within the colon is colitis. This may involve either a small area or the entire tract.

On X-Ray the haustrations, normally seen, are absent, and the wall presents a smooth appearance with narrowing of the lumen—the pipe stem colon.

Most physiologists today believe that the intrinsic vegetative nervous system within the bowel wall, causing the expansion and contraction of the taenia coli, is stimulated by the chemical condition of the bowel content, and in colitis we find evidence of the absence of this stimulation.

It is rare in my practice to see a patient, suffering from colitis, who has not had the appendix removed with a short period of relief, followed by a recurrence of the primary condition with greater severity.

In all cases of colitis the bacterial content of the stool should be ascertained with diligence, and the chemical status of the content observed. Remember that mucus in the stool does not mean colitis. The mucus may come from any place along the gastro-intestinal tract or its adnexia.

The bacteria of the colon are too numerous in variety to enumerate. Some are of value in the body economy, but the majority are capable of setting up infection anywhere in the system.

Among the infections arising from the right colon are diseases of the liver and biliary tract and non-specific infections of the genito-urinary tract. These are the most common.

It is easy to conceive how long continued absorption of toxins and bacteria into the portal circulation can overwhelm the liver and set up Hepatitis. This infection in time extends into the biliary tract, and cholecystitis ensues with later formation of gall stones.

You will recall the classical definition of a gall stone as being a monument to the dead bacillus buried within. Naunyn<sup>8</sup> states that 80% of cholecystitis is caused by the *Bacillus Coli*, which has the power to break down bile salts with precipitation of cholesterol.

I believe that the recurrence of symptoms simulating cholecystitis after operation is due to the hepatitis which preceded the gall bladder condition.

Cecil's Clinical Medicine states that 50% of pyelitis and cystitis may be traced to *Bacillus Coli* and that, of these cases, 20% are in pure culture. I am inclined to think that the percentage is too low—at least it is in my practice.

In recent years, more and more time and study are being devoted to the colon in cases of chronic arthritis.

The acute condition may have its origin in the teeth or tonsils, but it is not unusual to find in the chronic case that removal of these organs does not produce the results expected.

Pemberton<sup>9</sup> and Osgood, in their work with the Committee on Rheumatism, repeatedly mention abnormality of the colon in these cases.

Fletcher and Graham<sup>10</sup> have studied intensively the relief of arthritis when the colon is treated as the source of the disturbance. They have demonstrated by repeated X-Ray films the changes which can be produced in the colon as to tone, length, and chemical reaction, with concurrent improvement on the part of the patient.

In my own work I find X-Ray of the colon and bacterial observation the two important points in the investigation of these cases. In every case in my series I have found colonic malformation, loss of tone, and, in the smear of the fecal content, streptococci have been reported.

Improvement in all cases has followed treatment and, in a few instances, practically a cure has been obtained.

Other systemic conditions, which have yielded to treatment directed towards the colon, are eczema, urticaria, some cases of neuritis and migraine, and certain types of hypertension. The ordinary frontal headache of the so-called bilious type can be relieved in a very short time by a saline enema and diet.

This brings us to the subject of treatment which might well be a paper in itself.

The first, and, to make it emphatic, the most important detail in treatment, is diet.

This must not be too limited in amount, nor should it be monotonous. If there is any spice in variety it surely must be in a man's diet.

It is never fair to a patient to say, "Go on a liquid diet." The patient might think that you included ginger ale and beer.

You must be specific and write a definite list of food allowed in each case and, if possible, arrange the diet list in meals.

These cases do better on solid food except in acute attacks of colitis, during which stage milk and Celestins Vichy and fruit juices are indicated.

In all cases carbohydrates must be reduced to a minimum. This will starve out the saccharo-butyric and putrefactive bacteria. By all means stop the adult patient from eating cereal, gruels and excess bread of any color. I look on cane sugar almost as a poison. Bran is not only of no value to these patients, but, in most cases, does harm as, also, do such preparations as syllium seeds and similar bulky products. I am opposed to the theory of bulk because the colon works by chemistry and not on account of bulky, indigestible fodder.

Vegetables, so far as possible, should be pureed through some such machine as the Sep-Ro-Siv which removes all cellulose and seeds.

Such greens as spinach, dandelions, beet greens and kale should, as Alvarez says, be left for the cows. In certain cases of colitis and spastic colon, I eliminate lettuce and cabbage.

I have yet to see any damage in colonic cases arising from proteins, as obtained in meat, fish and eggs. Your patients will feel more encouraged if they are allowed an occasional meal which includes rare beef.

Spices and condiments are omitted entirely.

Animal fats will furnish better body heat and a heat more lasting than carbohydrates.

Tap water is allowed, in prescribed amounts, according to the condition treated. I have felt for some time that ordinary water is stored up in the body tissues in greater amount than required and, for this reason, I am inclined to recommend Kalak Water, Celestins Vichy or Laco Citrates dissolved in water.

The local treatment of the colon is secondary to diet and must be chosen according to the disease under consideration.

The enema of normal salt solution is most valuable and effective. It should be given through the .32 cm. colon tube, which should be inserted far enough to pass the internal sphincter. The patient will find the most comfortable way to take an enema is to lie on the left side on the floor and hang the bag on the door knob—no higher.

I cannot understand why some physicians still oppose enemas when they are so valuable in treatment.

In certain cases, where results are not sufficiently complete by enema, an irrigation should be given.



This method of treatment may be disliked by some, but this is due to the fact that they are not given personally by the physician, or else not under his personal observation. They should be given in the office just as a bladder irrigation, as nurses cannot be expected to use good judgment either in diagnosis or treatment.

The usual type of irrigation with four, five or more gallons of water is bad in theory and results. It distends the colon, washes back fecal matter, gas and bacilli into the absorptive portion of the colon and makes the colon go through the process of eliminating them a second time.

Correctly given, not more than three quarts of water in small amounts are given to open the bowel, as the tube is inserted, and this is drained out at once, and the procedure repeated until the tip has reached the desired point in the colon. Then a quart of medicated solution is allowed to flow into the bowel, and the chemical reaction produced will bring prompt response.

In these treatments solutions such as Neo Silvol, 50 grains to a quart, may be used. In others an ounce of Sodium Salicylate, with a generous amount of Sodium Phosphate, may be used without causing any of the usual symptoms arising from large doses of salicylate by mouth. Other solutions used are made up of acid sodium phosphate, sodium thiosulphate and, in excessive disturbance from the *Bacillus Capsulatus* and Welch bacilli, we use a mixture of Phosphoric Acid, Hydrochloric Acid and Potassium Permanganate.

When, after a series of enemas or higher treatments are given, the fecal smear shows the desired change in the bacterial content, I introduce a pure culture of *Acidophilus* in beef broth with sugar of milk. This is the only way I have been able to produce a good growth of this bacteria in the cecum. Of all the *Acidophilus* preparations I have examined, I have found only two with viable *Acidophilus*. Also, I might add that the life cycle of the *Acidophilus* is markedly shortened by implantation in milk. If *Acidophilus* Milk is used it must be freshly prepared, rapidly used and an overabundance of the bacteria implanted.

I am sorry not to have had time to go to greater detail on this subject, but I trust that what I have said will serve to draw your attention to the colon in all chronic cases under your care.

To summarize, I would say:

- (a) The colon on the right side is a virulent focus of infection.
- (b) Bacteria and toxins do escape from the colon into the circulation.
- (c) In diseases of the liver and gall bladder and all non-specific diseases of the genito-urinary tract, the colon should be investigated.
- (d) The colon is a factor in chronic arthritis.
- (e) The most important factor in treatment is diet.

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#### Discussion

DR. BRAY: I feel that Dr. Cummings has presented a splendid paper on one of the most debatable subjects in medicine. Dr. Cummings has quoted freely from the literature and from an experience of many years devoted to the study of the colon.

No one can doubt the importance of the subject and no one can doubt the perplexity of the problem. The puzzling nature of the problem has naturally led to much controversy and differences of opinion. Innumerable investigators have contributed to the subject, but as yet there has been but little actual scientific evidence produced which demonstrates beyond all question that alterations in the intestinal flora are responsible for all the various disease conditions attributed to it.

However, we must admit that the enteric canal is so constructed—both anatomically and physiologically—as to furnish an adequate culture media for the growth of certain bacteria. But I do not feel that we can as readily subscribe to the belief that the rather hypothetical toxins liberated by intestinal bacteria are responsible for the feelings of ill health so frequently associated with intestinal stasis.

Those of us who have tried to associate the symptoms of the colonic invalid with the bacterial content of the stool must have become disheartened by the variability of the cultural studies. There are many factors which determine the type of intestinal flora and this must be considered before attaching too much significance to cultural studies. The finding of a certain organism in preponderance, or an organism not usually present in the stool does not mean that they are the cause of systemic disease. Vaccines prepared from organisms recovered from the stool are again being used. A positive skin test dose simply means that the individual is sensitized to a specific organism. It does not necessarily follow that the bacteria are responsible for symptoms. Probably every one of us have become sensitized to one or more strains of our intestinal bacteria.

Dr. Cummings has mentioned the clinical importance of the ilio-cecal region. This is undoubtedly the region in which absorption can readily occur, and if intestinal bacteria or their toxins invade the tissues they probably do so at this point. The dryness of the feces in the transverse and descending colon is one of the features which prevents absorption of toxins and the passage of bacteria—unless, because of some abnormality, the feces remain in the liquid state. The *B. Coli*, *B. Typhosus*, *B. Welchii* and the *Streptococcus fecalis* are so frequently recovered from gall stones, the gall bladder wall, the articulations and genito-urinary tract, that it is impossible to doubt the intestinal origin of these pathologic conditions.

The X-Ray has been most helpful in the study of colonic stasis. I prefer to use the progress meal for this purpose. A residue of 72 hrs. in the ilio-cecal region must be considered as being indicative of delayed motility. The usual 24 hr. routine observation is worthless in the study of altered colonic physiology. If true stasis does exist we must then endeavor to find the cause. Many factors may be at work and the case must be studied as an individual problem. The Barium enema and sigmoidoscope give information of the most helpful kind.

Dr. Cummings has mentioned colitis as being associated with intestinal toxemia. I would prefer to use the term "unstable or irritable colon" to describe these cases, as there is rarely any evidence of actual colonic inflammation. As yet there is no proof that the lethargy, headache, backache, fatigue, vertigo, etc., are due to the absorption of intestinal toxins arising from colonic stasis or con-

stipation. My feeling has been that these symptoms are really reflex in character, the stimulus being the colonic spasm and irritability. The removal of a few fecal scybalae is usually followed by complete relief—and occurring altogether too quickly for toxemia to have been the cause.

As to the treatment of colonic stasis or colonic toxemia, I am in complete accord with Dr. Cummings' view that each patient is an individual problem. As to diet, I would certainly advocate a carbohydrate diet in the presence of a putrefactive toxemia. The addition of lactose will usually cause a quick change from the putrefactive to the aciduric organisms. Dr. Cummings advocates colon irrigations. I am glad to hear him state that large quantities of water should not be used. I believe that it was Frank Smithies who said that the "colon should not become a filling station." I have had no experience with medicaments added to the irrigating fluid. I feel that the colon enema, if given wisely, and by one properly trained in the technic, has a definite value. If performed by one inexperienced in the method, or carried on for too long a time, it can unquestionably be productive of harm.

In closing, I believe that Dr. Cummings has given us much to think about and has brought up more problems in gastro-enterology which remain to be solved.

---

## THE RHINOLOGICAL TREATMENT OF ASTHMA\*

By JAY N. FISHBEIN, M.D.  
203 THAYER ST., PROVIDENCE, R. I.

It is only of comparatively recent times that the nose and throat has been seriously considered as a potential factor in the causation of asthma. Yet it is over fifty years since Voltolini<sup>1</sup> reported his cure of a case of asthma following a nasal operation. His discovery has been both a fortunate and unfortunate one. Fortunate, because it served to focus attention upon the strong possibility that infection of the sinuses, tonsils or teeth might play an important part in the treatment of asthma. Unfortunate, because it brought about a needless sacrifice of intra-nasal tissue in many cases. Rhinologists everywhere rushed blindly into nasal surgery as a cure-all for bronchial asthma and this enthusiasm

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\*Read before the R. I. Ophthalmological and Otological Society, April 27, 1933.

doomed Voltolini's discovery. A few patients were cured, some were relieved and many were made worse by this wholesale and inconsiderate assault upon the nasal tissues. It is extremely unfortunate that this solitary successful result should have stimulated such radical measures without greater deliberation, because it brought into disfavor an idea that deserves considerable merit. No patient should be subjected to an intra-nasal operation unless the conditions are such as to warrant it, aside from the question of asthma.

Numerous studies of the nose have been made and it has been the opinion of many of these investigators that the ethmoid region particularly has been the area in the nose which in susceptible subjects produces the broncho-spasm. This region has been termed the "Asthmo-genetic Zone." Brodie and Dixon in 1905 demonstrated this fact by experiments. Hazeltine<sup>2</sup> <sup>3</sup> mentioned it in 1910. It was rediscovered by an English surgeon, Sir Dundas Grant, in 1927, and by other investigators since. The treatment of this region has been difficult, chiefly due to its inaccessibility in the highest and narrowest portion of the nasal chamber. This difficulty has been still further augmented by deviations and thickenings of the septum and anatomical variations of the ethmoid cells and turbinates which we find to be present in many asthmatics. These findings clearly demonstrate that the rhinologist is highly important in the successful treatment of asthma.

Dr. James Adam of Glasgow, Scotland, in 1900 advanced the view that asthma results from two factors—a toxemia, and a lesion in the respiratory tract, *generally in the nose*. At about the same time Dr. Burton Hazeltine of Chicago arrived at practically identical conclusions. These authors presented the theory that asthma is the result of a toxemia, that its cause is a toxin, and that the spasm depends upon a delicate nerve chain connecting the upper air passages with the bronchial musculature. They consider that allergy is an effect, not a cause. That anaphylaxis is an effect. That disturbance of endocrine functions is an effect. That hypersensitivity is an effect. That asthma itself is an effect, and that the cause of all of these is toxemia.

The onset of asthma in many cases follows an acute infection of the respiratory tract, particularly the nose. Patients usually give a history of either frequent colds or persistent colds. Some of them say they hardly get over one cold before they get

another. Where asthma patients show an infection limited to the anterior ethmoid cells it is indicative of an early infection and the condition is usually easily treated. Those cases of longer duration usually have an involvement of the entire ethmoid capsule. The old, long-standing cases almost invariably have an extension of the infection to the antrums. In children, because of the presence of infected adenoid tissue, the sphenoids and posterior ethmoid cells are invariably infected and tonsillectomy and adenoidectomy is advisable in all cases of asthma where the nose shows evidence of infection or there is a history of frequent colds.

Hazeltine<sup>2</sup> <sup>3</sup> states that "a patient cannot have bronchospasm with a previously entirely normal nose." He further designates the ethmoid region as the area in which this infection occurs.

There are four conceivable ways by which the symptom complex called asthma may be produced through nasal disease:

(1) Mucopurulent material may drip into the pharynx from an infected sinus and the infection gradually involves the mucous membrane of the trachea and bronchi.

(2) Mucopurulent material may be retained in a sinus and the toxic products be absorbed through the blood stream or lymphatics or both. Blumgart<sup>4</sup> and Mullin<sup>5</sup> discussed the possibilities of intra-nasal absorption.

(3) Nasal obstruction from deviation of the septum, polypi or hypertrophied turbinates, resulting in impaired drainage and subsequent infection.

(4) Sluder<sup>6</sup> considered that the bronchial spasm was merely a reflex effect of some local stimulus arising in the upper air passages and transmitted by way of the nasal ganglion, the vidian nerve and the carotid plexus to the sympathetic trunk in the neck.

Asthma, then, is dependent upon two factors, toxemia and ethmoid irritation. This has been substantiated by the findings of the following men:

In 1913 Matthews<sup>7</sup> in the Mayo Clinic found that 90% of 300 asthmatic cases had a principal etiologic lesion in the upper respiratory tract, and that the treatment was successful in proportion as a free and continuous drainage was obtained.

In 1927 Phillip S. Stöut<sup>8</sup>, in examining the nose and throat in patients suffering from bronchial asthma, found that 46% had sinus infections:

20% antritis;  
16% ethmoiditis;  
10% frontal sinusitis.



In 1929 Rackemann and Tobey<sup>9, 13</sup> found a true focus of infection in the nose, throat and teeth in 44% of all cases.

Dr. Chevalier Jackson<sup>10</sup> has established that there is some relation between the infections of the cranial air cells and bronchitis.

Dundas Grant found well marked nasal disease in 63% of the cases he studied, of which 24% had polypi. Instituting nasal treatment he was able to bring about:

Cures in 21% ;

Improvement in 60% ;

No-improvement in 19%.

In 1929 Kern and Schenck,<sup>11</sup> in the Hospital of the University of Pennsylvania, subjected 200 asthma cases to clinical and X-Ray examination to determine the presence or absence of disease of the nasal accessory sinuses. The result was that in 173 cases (86.5%) they found positive sinus disease.

In 1932, of 25 chronic severe cases examined by Rackemann,<sup>12</sup> evidence of chronic infection in the nasal sinuses was found in all but two.

The sinuses are not always profusely suppurative. In many of the cases, transillumination and roentgenograms of the sinuses may be negative, and yet unquestionably be the site of infection as demonstrated by the recovery when this focus is removed. It is simply the fact that there has not been a sufficient pathological change that could be demonstrated by these methods.

It is generally recognized that the majority of the chronic hay fever patients eventually become asthmatic, ending as a chronic asthmatic with perhaps seasonal exacerbations. On the other hand, a patient may have bronchospasm all his life without developing the tissue sensitization necessary to produce hay fever. But, a patient cannot have repeated attacks of hay fever without developing the nasal abnormalities necessary to produce asthma. The basic toxicosis already exists. The repeated attacks eventually cause sufficient nasal damage as to bring about the changes which result in asthma.

#### *Pathological Findings*

These consist primarily of edematous infiltration of the sub-epithelial stroma of the mucous membrane, the epithelium showing striking evidence of hyper-secretion with desquamation. This serous swelling of the subepithelial stroma results in epithelial hyperplasia, and in the more chronic cases, fibrous tissue hyperplasia of varying degrees.

#### *Treatment*

Nasal treatment for the relief of asthma should be conservative. The time of radical nasal surgery for the mitigation of this condition is a thing of the past — or should be so. It offers little or nothing of ultimate value to the patient. By radical surgery is meant such procedures as effect marked alterations of the normal mechanical arrangement of the tissues comprising the lateral nasal wall. There are numerous reports by rhinologists of cures obtained in asthma by radical measures such as complete excision of the ethmoid capsule or radical antrum surgery. Not only was it considered necessary to remove every bit of cell structure, but also every vestige of membrane that appeared to be pathological. Nasal and sinus operations should not be performed primarily for the cure of asthma. Surgery should be resorted to only when such conditions exist as would call for operative intervention in the non-asthmatic patient; namely, sinusitis, nasal polypi, deviated septum with obstruction, infected tonsils, etc. By assisting nature to bring about a normal resolution of the mucosa of diseased cells using such measures as will tend to establish aeration and drainage, will prevent the necessity of many radical operations.

Tonsillectomy and adenoidectomy have given some very satisfactory results in the treatment of asthma in children.

The procedure carried out is as follows:<sup>14</sup>

The nose is examined by anterior and posterior rhinoscopy which includes the use of the nasopharyngoscope. This instrument is invaluable as an aid in determining the presence of nasal pathology, and more reliable than the X-Ray. Also, the anthroscope is employed where indicated.

The nasal secretions are first washed away by some form of lavage. Tamponage augmented by diathermy has been found to be the most effective method of treatment. It is merely making use of the Dowling tampons with diathermy treatment. Dr. Dowling, of Albany, N. Y., advocated the use of colloidal silver tampons for the treatment of sinus infections. The colloidal silver employed is a 15% argyrol solution. This colloidal solution passes through the membrane without ill effects to it and is capable of destroying bacterial life without injury to the tissues of the host. He recommended leaving the tampons in situ for about an hour, until the solution was taken up by the tissues by the principle of osmosis. This action is greatly enhanced by the

use of diathermy and the time of treatment is reduced to about 15 or 20 minutes. The solution is distributed by the circulation beyond the area of its application.

The positive electrodes are made of light tape consisting of long, continuous strands of fine metal.



closely woven together. A piece of long fibre cotton is laid in the flat of the hand, and rolled about the tape by the means of a smooth applicator. (It is essential that the cotton covers the ribbon completely to avoid an unpleasant prickling sensation in the nose.) The tampon is saturated with the argyrol solution and inserted into the middle meatus as far back as possible in the direction of the sphenoid sinus, following which the applicator is withdrawn. Preceding this a smaller tampon is inserted high into the olfactory fissure.

The indifferent or dispersive electrode is placed on the forehead by means of a head band. It is simpler to adjust and more advantageous than on the back of the neck, as the distance is less and the resistance is correspondingly reduced. The electrode consists of a piece of block-tin about  $1\frac{1}{2}$  by 6 inches, to which is fastened a strip of diathermy tape. It is attached to a piece of rubber about 2 by 8 inches, and fastened to the head by means of a letter-carrier's strap which has a spring catch, enabling it to be fastened snugly. The block-tin is sparingly covered with a lubricant jelly, where it comes in contact with the skin.

The two ends of the diathermy tape from the nostrils are attached to one of the poles, and the tape from the dispersive electrode to the other terminal. A current of from 250 to 450 milliamperes is employed, and left on for about 20 minutes. When the tampons are removed at the end of this period they are found to be quite warm, decolorized and practically dry. Frequently stringy collections of muco-pus will be found to adhere to the posterior ends of the tampons and are removed with them as they are withdrawn.

The warmth produced by Diathermy is termed *Conversive Heat* within the tissues as contrasted with *Conductive* or *Convective Heat*, which does not penetrate very deeply into the body. It is a long wave and high frequency current converted into a comfortable heat by the resistance of the tissues. Its object is to produce an active hypermia to soften and liquefy deposits, increase elimination of toxins, and hasten repair processes.

Following the treatment there is a discharge of mucus from the membrane and the result is a considerable depletion of the turgid tissue. Many conditions within the nose yield to this type of treatment. Acute or chronic infections of the nasal accessory sinuses are benefited, both by the direct germicidal effects of the silver salt and by the improved drainage of the upper air passages resulting from the reduction in swelling.

Where the patient is found to be hypersensitive to some dust or food, an attempt is made at desensitization to the specific substance. This brings about



ordinary immunity associated with the production and the increase of circulating antibodies, agglutinins and precipitins. Where no specific substance is found, non-specific (*Protein Shock*) treatment is given consisting of the parenteral injection of a non-specific protein. The benefit of vaccine treat-

ment depends upon the production of a definite local reaction in the subcutaneous tissue. This reaction appears in about 12 hours as a red, swollen, inflammatory area deep in the tissues, persisting for several days.

The following vaccines have been used: Typhoid bac., Colon bac., Van Cotts combined Bacterial Vaccine (Parke Davis), Sherman's Vaccine, and Milk Injections. There appeared to be little if any difference to the type of stock vaccine employed. More satisfactory results, however, have usually been secured by the use of autogenous vaccines properly prepared.

The following is a record obtained in the treatment of 170 Asthma patients:

1. Name.
2. Sex—M. 64, F. 106.
3. Age of onset of Asthma.
4. Age when presenting for treatment here.
- Age Incidence:
 

5 to 13 years .....	12 patients
13 to 20 years .....	16 patients
20 to 30 years .....	13 patients
30 to 40 years .....	39 patients
40 to 60 years .....	78 patients
Over 60 years .....	12 patients
5. Its progress.
6. Age of beginning treatment; kind; results obtained (previously).
7. Results obtained in present series:
 

Complete relief .....	42 cases
Marked relief .....	101 cases
Improvement .....	19 cases
No change .....	8 cases
	170
8. Factor of Heredity (Hay Fever or Asthma)—128 cases or 70%.
9. Presence of Hay Fever—119 cases or 61%.
10. Nasal operations undergone previously—22 cases or 13%.
 

Results obtained:

Good .....	4 cases
Fair .....	7 cases
Poor .....	11 cases
11. Nasal operations performed during period of treatment—16 cases or 9%:
 

Caldwell-Luc Operation .....	1 case
Opening Maxillary Sinus (breaking through antro-nasal wall; Halle's Operation) .....	6 cases
Ethmoidectomy .....	5 cases
Removal of Polypi .....	9 cases
Submucous Resection .....	3 cases
Removal of Spurs .....	4 cases

(Several of these patients had combinations of the above operations.)

- A. Local results:
 

Satisfactory .....	15 cases
Unsatisfactory .....	1 case

- B. Effect on Asthma:
 

Complete relief .....	2 cases
Marked relief .....	5 cases
Improvement .....	8 cases
No change .....	1 case

12. Nasal Pathology found—in 142 cases or 84%:
 

A. Infection of the Frontal Sinuses .....	5%
B. Infection of the Maxillary Sinuses .....	24%
C. Infection of the Ethmoid Sinuses .....	47%
D. Deviated Septum or Spurs .....	8%

- In addition to the above:
- |  |     |
|--|-----|
| (1) Hypertrophic Rhinitis .....        | 36% |
| (2) Nasal Polypi .....                 | 8%  |
| (3) Atrophic Rhinitis .....            | 7%  |
| (4) Infected Tonsils or Adenoids ..... | 16% |

13. Roentgen Ray Findings—taken in 21 cases:
 

Negative in 8 cases.
Positive in 13 cases.

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S M I L E

## EDITORIALS

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### JOHN M. PETERS

To have been the superintendent of a large general hospital for forty-four years is in itself no mean accomplishment; to have done this in such a way as to merit the confidence, respect and affection of an entire community is a far greater achievement, and one upon which Dr. John M. Peters must look with a great deal of quiet satisfaction and justifiable pride. When Dr. Peters succeeded Dr. Charles E. Woodbury as superintendent of the Rhode Island Hospital, he became the head of an institution of one hundred and twenty beds with an annual budget of some forty-eight thousand dollars; when he surrendered control, the hospital had a capacity of six hundred beds, and an annual budget of about seven hundred thousand dollars. During this same period the hospital plant has increased from practically a single large building to a great collection of pavilions, nurses' homes, service buildings, solaria, out-patient departments, and all the other physical components of a modern metropolitan hospital. In all this material growth Dr. Peters has played an important part, pointing out the needs as they have arisen, and interesting persons of means to satisfy these needs. The material increase of the hospital has been matched by a steady growth in the service rendered by the hospital, both in quantity and quality, and in this connection Dr. Peters' services have been, if possible, more important than in obtaining financial support. Many hospitals throughout the country have chosen laymen as superintendents; others have had medical men in these positions, but medical men completely out of touch with clinical problems; the Staff of the Rhode Island Hospital has been extremely fortunate in having as the executive a well-trained medical man who has remained keenly alive to medical problems and who has always lent sympathetic support to all attempts to improve the treatment of the patients in the hospital. Expensive supplies and equipment considered necessary to proper treatment have somehow or other been obtained, even in times of financial stringency, and the work of the attending physicians has not been hampered by ill-advised economies. And all of this work has been carried on with good humor and kindness, as attested by those keenest of critics, the children, in their cries of glee whenever he has entered their wards.

The prestige of the medical profession in Rhode Island has been greatly enhanced by the work of Dr. John M. Peters, and the RHODE ISLAND MEDICAL JOURNAL, on behalf of the profession, congratulates him on a job well done; and it further congratulates him on his ability to retire, in full vigor of rugged health and efficiency, to the leisurely enjoyment of his hobbies and of the many friendships formed during his long service to this community.

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### THE WOONSOCKET PROTEST

Whatever may be the future of government in this changing world, whether a trend toward fascism or socialism, or a sturdy adherence to the democracy of our fathers, is to be our lot in these United States, the future of American medicine should be in the hands of the doctors, and all attempts arbitrarily to force on the profession a radical change in its status should be vigorously resisted. For those members of the profession, however, who honestly believe that a change in the direction of State medicine is the wisest way to correct certain unfortunate conditions that exist today, and who are willing to bring the subject up for discussion in the open, the JOURNAL has no criticism. There is something, it must be admitted, to be said on that side of the question and it should be said, carefully and without prejudice, that it may be adequately discussed and answered and a wise decision may be reached.

When, however, in a community, without the advice, knowledge or consent of the medical profession of that community, "health" agencies of one sort or another are set up which may interfere with the work of the local physicians, we are dealing with a condition which should not be tolerated. Certainly no welfare agency or nursing organization is justified in taking over any part of the care of the sick without reference to the plans or judgment of the community's organized medical profession. Where a need for clinics of various sorts exists the physicians of the community are the best qualified of all citizens to recognize such a need and to take a major part in their establishment and operation. For nursing or other agencies to bring in outside physicians and operate clinics in the face of opposition on the part of local doctors is not only bad judgment but it constitutes an insidious type

of attack on the present status of the medical profession and one which is quite without justification. In this connection the protest of the District Medical Association of Woonsocket against the ill-advised establishment by outside agencies, and in charge of outside physicians, of various clinics, the latest by the Mental Hygiene Society, should receive the hearty support of their colleagues. If it seems to anyone that a need for such clinics exists in any community, obviously the first move should be to seek the advice and co-operation of those who have been bearing the burden, the local profession, by a direct appeal to their organization, the district society. While making no claim to perfection, and while realizing their obligation to work constantly for the best interests of their fellow citizens in all matters pertaining to health, the licensed practitioners of Woonsocket, and of the whole of Rhode Island, can rightly feel that it is they and not others who are the legitimate guardians of the great ideals, traditions and responsibilities of medicine.

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#### PROHIBITION? NO. TEMPERANCE? A THOUSAND TIMES, YES

Now that the Prohibition amendment has been formally repealed after a long siege of argument and counter argument, it is not unwise in the light of past experience to look upon the liquor question clearly and without prejudice with a view to formulating our attitude towards the future.

By a painful process of trial and error, we have observed that unpopular legislation cannot regulate public or private moral issues or absolute conduct. We also know that the more or less unregulated sale of intoxicating liquors, coupled with political influence and patronage, is a thoroughly disreputable condition for any community.

To strike a sensible level in the matter of liquor traffic is a difficult problem fraught with many and devious pitfalls. That is the extraordinary job which confronts our legislative authorities.

But when all is said and done, the physician knows in all sincerity that while alcoholic beverages are pleasant to imbibe and allied with geniality, friendliness and conviviality, still, like many other narcotic poisons, large doses produce untoward symptoms and it is not impossible for ethyl alcohol to be lethal in certain cases.

We know of medical uses, but we know of popular abuses for alcohol. We are well aware of the ramifications of its consumption as a beverage, but it is distinctly our duty to warn "our public" of the dangerous results of intemperance. Our issue is clearly a medical one—to educate our patients to the danger of excessive use of poisonous narcotics. We may well leave the moral issue to others who are perhaps better qualified to deal with that angle.

We should join, however, in a nation-wide campaign for temperance.

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#### REPORT OF DELEGATE TO THE HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION

By ROLAND HAMMOND, M.D.

PROVIDENCE, R. I.

It is again my privilege and duty to present to you a report of the recent meeting of the American Medical Association in Milwaukee, and of the activities of the Association during the past year. With this report your Delegate brings to a conclusion a service of ten years in this office, with attendance at every meeting except one when he was absent from the country. The work has been pleasant, instructive, and, I hope, of service in providing a contact, continuous over this period, between the constituent State Society and the parent organization, which had hitherto been lacking.

Like all other large corporations the American Medical Association has suffered from the depression, both in loss of membership and in reduction of income from Fellowship dues and from depreciation in securities. The total depreciation in securities held by the Association amounted to less than six per cent, which is a remarkable record for large corporations.

The *Journal* of the Association has come through the storm with standards unimpaired. There has been no decrease in the number of pages of reading matter, and its standards of advertising have not broken down because of financial stress. The subscription price is very low considering the high quality of the publication. A series of articles indicating our present knowledge of the vitamins attracted world-wide attention. The *Journal* is the the only medical publication with a complete service in the field of foreign correspondence. The special *Journals* were published at a considerable



loss, and the Quarterly Cumulative Index is a heavy financial burden upon the Association, but its value to scientific medicine is so great that it must be continued. *Hygeia*, the health magazine, is now ten years old, and is firmly established as the leading periodical in its field. The package library service maintained by the Association Library is one of the most important services rendered to the individual physician, and is undoubtedly popular because it permits the physician to have available a vast amount of research material in his own work-room or library at home.

Many Fellows of the Association have been unable to keep up their Fellowship dues and the Trustees instituted an emergency policy continuing these Fellows on the rolls and allowing their dues to lapse until the times had improved.

The Council on Physical Therapy recommends the spread of education concerning the values and dangers attending the employment of physical therapy apparatus by untrained people, and the control of deceptive advertising and high pressure salesmanship.

The Council on Pharmacy and Chemistry has proceeded along well established lines and has become more important each year. The best manufacturers of therapeutic products are more and more seeking the approval of the Council for their products and appealing to the Council to pass judgment on proposed new products.

The recently established Bureau of Medical Economics bids fair to be one of the most useful adjuncts of the Association. Although barely two years old the Bureau has initiated valuable research studies in contract practice, workmen's compensation, collection methods and agencies, the teaching of medical economics in medical colleges, group practice, group hospitalization and health and accident insurance practice.

The Bureau of Legal Medicine and Legislation now has a full-time worker in Washington, and has been active in affording assistance to State and County Medical Associations with reference to legislative and legal problems. Some progress has been made in the age-old fight to eliminate government competition in the private practice of medicine. Recent amendments to World War veterans' legislation have limited the right of veterans to free hospitalization and free medical service for non-service connected disabilities.

The Committee on Foods, which is just completing its third year, exerts a powerful influence for

controlling foods and food advertising in the interests of the public.

The Judicial Council has received many communications pertaining to new forms of medical practice which have been proposed, induced largely in the stress of the present unfavorable economic situation. In replying to these inquiries, the Council, with its usual good judgment and far sightedness, has urged that the most careful scrutiny be made of any and every new plan for providing medical or hospital service. These plans should be considered not in the light of present economic conditions alone, but with reference to their ultimate effects on the future of medical practice and the progress of medical science, and particularly for their possible untoward effects on the public welfare. The question of contract practice has been restated and defined by the Judicial Council. Contract practice in itself is not unethical, but becomes so if there is solicitation of patients, underbidding to secure the contract, when compensation is inadequate to assure good medical service, when there is interference with reasonable competition in a community, when free choice of a physician is prevented, when conditions make it impossible to render adequate service to patients, or when a contract is contrary to sound public policy.

The Council on Medical Education and Hospitals has made a study of the hospitalization of patients with nervous and mental diseases, and has been of much assistance to small hospitals. It has proposed an outline giving the essentials of an acceptable medical school, and one giving the essentials of a hospital approved for residencies in specialties.

Dr. Edward H. Cary, President of the American Medical Association, who honored Rhode Island medicine last February by attending a dinner in his honor, sponsored by the RHODE ISLAND MEDICAL JOURNAL, has been most indefatigable in the duties of his office. During the year he travelled nearly 100,000 miles attending medical meetings and addressing lay organizations. He reviewed the year's accomplishments, calling attention to the successful issues attained: (1) the right of the physician to use his own judgment in prescribing alcoholic liquors; (2) the defeat of Sheppard-Townerism and the substitution of state and local agencies for federal bureaucracy; (3) the steps taken in further control of narcotics through uniform state legislation; (4) the activities of the legislative committee in regard to veterans' care,

which, without doubt, exerted marked influence in the recent executive orders affecting the hospitalization of cases having no service origin; (5) endorsing the minority report of the Committee on the Costs of Medical Care and calling attention to the soundness of the principles enunciated; (6) the need for unity of spirit and professional desire in our county and state societies as a necessary corollary to successful action through our national Association. The invasion of the field of private practice by the public health worker is a crying issue in many parts of the country, and must be combated: (1) by insisting that public health officers must be physicians and not lay officers; (2) by a broad-minded attitude on the part of the profession as to the need of this public health service for the benefit of the people, and (3) an enlightened public opinion.

President-elect Dean Lewis in his address interpreted the attitude the medical profession should take in regard to care of the veterans. The personal contact of the doctor with his representative in the legislature is one of the most vital factors in influencing legislation along this line. He touched on the cost of medical care and emphasized an important phase sometimes overlooked in the high cost of hospital construction, which greatly increases the cost without increased benefits to the patient. He disapproved of questionable forms of insurance for the care of the sick. He likewise admirably stated his conviction that merging of hospitals in many communities would lead to better service to all parties concerned. He dealt with the limitation of specialism and the simplification of medical practice, which should provide for a more satisfactory relationship of medical practice in the light of changes now in progress, especially in medical education.

The Sessions of the House of Delegates, four in number, were well attended and much important business was carefully considered and promptly transacted. The request for the establishment of a Section on Stomotology was not approved. A resolution aiming to terminate misleading and misrepresenting radio broadcasting of medicinal preparations and foods, was approved. The minority report of the Committee on the Costs of Medical Care was endorsed, as expressive, in principle of the collective opinion of the medical profession. A resolution that veterans suffering from non-service connected disabilities be treated in hospitals of the Army, Navy and Public Health Service, in-

stead of in the hospitals of the Veterans' Administration, was approved. Action by State Associations was urged to prevent the practice of medicine by corporations. The illegality of the practice of medicine by corporations has been established by the decisions of a number of state Supreme Courts. The policy of the President of the United States in reducing the cost of medical and surgical care of veterans to rational proportions, equitable both to the veteran and the taxpayer, was endorsed. State Associations were requested to elect their delegates for the calendar year in order that the confusion arising from late elections might be eliminated. The resolutions requesting a study of the subject of birth control were laid upon the table.

The Sections of the Scientific Assembly were well attended, and the papers were of a high order of merit. The Scientific Exhibit maintained its high standard of previous years, with the addition of many new features, such as the more liberal use of moving picture demonstrations and lectures. The Commercial Exhibit was complete and well attended. A notable feature was the inclusion of a greater number of food exhibits than in previous years. The registration at the meeting was about 4000.

Dr. Walter I. Bierring of Des Moines, Iowa, was chosen President-elect, and Cleveland was selected as the place of the next meeting.

Rhode Island was honored when one of its distinguished specialists, Dr. Albert H. Miller, served as Chairman of the Section on Anesthesia.

## OBITUARY

FREDERIC POOLE GORHAM

"I can scarcely realize that next September I shall, I hope, begin my Biology I course for the fortieth consecutive year. In all that time I have missed but very few lectures on account of illness or for any other cause, nor have I even taken a sabbatical year. Each year I look forward to the beginning of the course with just as much and perhaps more enthusiasm than I had that first year in 1893. I have thoroughly enjoyed my years of teaching. I have tried to give my best to the long line of students that have been in my classes. I have felt well repaid by the occasional word of commendation that has come to me from some appreciative student, but now I am overwhelmed by this



expression of appreciation by the University itself. I deem it a far greater honor to receive this degree from my own Alma Mater, where I have done my life work, than from any other institution. I shall certainly be present, Deo volente, to receive the degree at the coming Commencement." The President of Brown University, standing on the platform of the historic First Baptist Meeting House in June, 1933, is reading from a letter sent to him six months before. His voice, usually so clear and steady, falters a little as he continues: "Entitled to observe this year the fortieth anniversary of his graduation from Brown University; immediately upon graduation receiving an appointment to our Department of Biology, successively Instructor, Assistant Professor, Associate Professor, Professor of Bacteriology, Chairman of the Department, with an eye utterly single to the great calling of the teacher, never satisfied to rest in that already attained even when universally recognized as one of the outstanding figures in research and instruction, probably teaching in person more students than any other in the long history of Brown, his graduates holding positions of eminent usefulness about the circle of the globe; giving himself to the safeguarding of the life and health of his fellow citizens of the State of Rhode Island as bacteriologist and biologist, unselfish colleague and friend, carrying sunshine into every circle which he touched: By authority of the Board of Fellows, I confer the honorary degree of Doctor of Science *in absentia* upon Frederic Poole Gorham, and I ask that this sorrowing company rise and stand in silent tribute to his memory." And the entire company, recent graduates and old alumni, Fellows and Professors, fathers and mothers, representatives of city and state, and friends of the University, rises and silently takes part in this first impressive bestowment of an honorary degree posthumously in the history of Brown University.

Two short weeks before, as the result of a sudden but not unexpected heart attack, Professor Gorham had died on June fourth, in his sixty-third year. In his passing the medical profession of Rhode Island records the loss of one of its warmest friends and staunchest supporters. Some of us caught from him the first spark of enthusiasm for biological science which later kindled the desire to study medicine; many of us sat under him as a lecturer and looked on him as one of our finest teachers in college or professional school; all of us

have received benefit from his practical work in public health. For many years Brown has prided itself on having its influence permeate the surrounding community, and in this permeation no member of its teaching staff has done more than has Professor Gorham. As bacteriologist of the Providence Health Department for thirty-four years, president of the Rhode Island Tuberculosis Association, secretary of the board of directors of the Rhode Island State Sanatorium at Wallum Lake, member of the Rhode Island Shellfish Commission for twenty years, director of the work of mosquito control since 1913 and deputy milk inspector in Providence since 1914, as well as in other activities related to the welfare of his fellow citizens he has "set the highest standard of disinterested public service." The catalogue of his membership in learned societies is long. Noteworthy among the positions which he has held is the presidency of the Society of American Bacteriologists in 1907, and the chairmanship of the laboratory section of the American Association of Pathologists and Bacteriologists. For many years he has been an honorary member of the Rhode Island Medical Society and the Providence Medical Association.

We, therefore, as members of the Providence Medical Association, unite in expressing honor to the memory of a distinguished colleague, sincere sympathy to the members of his bereaved family, and deep sorrow at the loss of a beloved friend.

WILFRED PICKLES

ALEX. M. BURGESS

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## SOCIETIES

### HOUSE OF DELEGATES

November 23, 1933.

The regular meeting of the House of Delegates was held Thursday, November 23, 1933, at the Medical Library, and was called to order by the President, Dr. Chas. S. Christie, at 5 P. M.

A verbal report of the Council meeting held immediately preceding this meeting was made by the Secretary.

The budget for the ensuing year was explained by the Treasurer, Dr. J. E. Mowry, and on motion duly seconded it was adopted.

The dues for the ensuing year on motion by Dr. Skelton and duly seconded, and so voted, were fixed at \$10.00.

The President called attention of the delegates to suggested rules and regulations from the office of the Federal Relief Administrator looking toward the furnishing of medical service to recipients of local or state unemployment relief for which the individual physician may be paid from funds of the State or Federal Relief Commissions. It was voted that the President be authorized to appoint a committee to be known as the Emergency Medical Relief Committee to confer with the State Emergency Relief Commission with reference to the adoption of measures for the furnishing of medical service to recipients of unemployment relief. So voted.

A letter from the past president of the American Medical Association, Dr. E. H. Cary, relative to probable increase in hospitalization of veterans, was read to the House. It was voted that the President be requested to communicate with Dr. Cary the sympathetic attitude of the Rhode Island Medical Society toward no further extension of hospitalization of veterans suffering with non-service connected disability.

The resignation of Dr. Roland Hammond, the delegate for the past ten years to the American Medical Association, was presented, and accepted with expression of thanks and appreciation for his services in that office.

On motion by Dr. Hammond, seconded by Dr. Partridge, Dr. Guy W. Wells was elected delegate to the American Medical Association for 2 years beginning January 1, 1934.

A vote of sympathy for Dr. Frederick N. Brown, the editor of the R. I. MEDICAL JOURNAL, who has been ill for the past month, together with expression of the hope that he would soon return to health, was adopted, and the Secretary instructed to communicate the action of the House of Delegates to Dr. Brown.

For many years Dr. Charles H. Leonard has been carrying on the compilation of a historical catalogue conceived and initiated by Dr. George D. Hersey. Dr. Leonard has completed the catalogue, which is in loose-leaf style, and has presented it to the Society for its use. It was moved and seconded that the thanks of the Society be extended to Dr. Leonard for his gift, and for his untiring interest in the work of the cataloging past and present Fellows of the Society. It was so voted.

Adjourned.

Respectfully submitted,  
J. W. LEECH, M.D., *Secretary*.

# RHODE ISLAND MEDICAL SOCIETY

December 7, 1933.

The regular quarterly meeting of the Rhode Island Medical Society was held Thursday, December 7, 1933, at the Medical Library, and was called to order at 4 P. M. by the President, Dr. Charles S. Christie.

The minutes of the previous meeting were read by the Secretary and approved.

The President appointed the following Committee on Emergency Medical Relief:

Dr. Chas. F. Gormly, Chairman, Providence  
Dr. W. P. Buffum, Providence  
Dr. M. H. Scanlon, Westerly  
Dr. N. M. MacLeod, Newport  
Dr. L. J. Smith, Warwick  
Dr. Stanley Sprague, Pawtucket  
Dr. E. D. Clarke, Woonsocket

As Member at Large of the Board of Trustees of the R. I. Medical Library Building, the President appointed Dr. R. Morton Smith, West Warwick.

The President announced the deaths of the following members, and referred the matter of obituaries to the Committee on Necrology for action at the June meeting:

Wm. C. Canfield, Westboro, Mass. (St. Petersburg, Fla.), Non-resident, died Feb. 8, 1931.  
Geo. L. Richards, Fall River, Mass., Non-resident, died Nov. 9, 1933.  
Prof. F. P. Gorham (Honorary), Providence, died June 4, 1933.  
W. P. Watson, formerly of Pawtucket, died in Saco, Me., Sept. 12, 1933.  
P. E. Fisher, Providence, died Sept. 16, 1933.  
C. G. Savage, Westerly, died Oct. 12, 1933.  
W. R. White, Providence, died Nov. 3, 1933.  
F. W. Hayden, Pawtucket, died Nov. 18, 1933.

The following letter from Dr. Ruggles, chairman of the Committee on Investigation of the Needs of the State Hospital for Mental Diseases, was read, and it was voted to continue the committee:

"Since the notification of the appointment of a committee from the Rhode Island Medical Society to consider the problems and needs of the State Hospital for Mental Diseases, I have been busy getting from the State Welfare Commission a statement of their problems and plans for the coming year. Because of much necessary delay in formulating their plans for presentation to the State and

(Continued on page XIX)

RHODE ISLAND MEDICAL SOCIETY  
(Continued from page 16)

Federal Government, it has only been possible for them very recently to present a statement of such needs. I have communicated to the other members of the Committee this plan of the State Welfare Commission, but there has been no opportunity for a full meeting of the Committee since receiving the program of the State Welfare Commission. I am, therefore, submitting this letter as a report of progress, with the request that the Committee be kept in existence with the hope of giving a report at the next following meeting of the Rhode Island Medical Society.

Respectfully yours,  
ARTHUR RUGGLES, *Chairman.*"

COUNCIL MEETING

November 23, 1933.

The regular meeting of the Council was held Thursday, November 23, 1933, at the Medical Library and was called to order by the President, Dr. Charles S. Christie, at 4:30 P. M.

The reading of the minutes of the previous meeting were omitted.

The Treasurer's budget as follows:

Budget, 1934

Collations and Annual Dinner.....	\$750.00
Expenses of Secretary (Sec. hire).....	75.00
Printing and postage.....	125.00
Fuel .....	600.00
Gas .....	45.00
Electricity .....	85.00
Telephone .....	125.00
City water .....	15.00
House supplies and expenses.....	450.00
House repairs .....	300.00
Janitor .....	720.00
R. I. Medical Journal .....	400.00
Safe Deposit .....	7.00
Treasurer's Bond .....	25.00
Librarian .....	1,660.00
Delegates to New England Medical Council .....	150.00
Delegate to American Medical Association .....	100.00
Medical Library Association Dues.....	10.00
Insurance .....	275.28
	<hr/>
	\$5,917.28

Income for 1934

Annual Dues .....	\$4,700.00
Interest from Harris Fund.....	180.00
Interest from Morgan Fund.....	22.50
Providence Medical Association .....	450.00
Use of Building .....	75.00
	<hr/>
	\$5,427.50
Balance in Bank November 1, 1933.....	1,032.69
	<hr/>
	\$6,460.19

Harris Fund

Mortgage Security Corp. of America.....	
Central Arizona Light & Power Co.....	\$50.00
General Public Utilities Co.....	130.00
	<hr/>
	\$180.00

James R. Morgan Fund

Missouri Power & Light Co.....	\$22.50
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J. W. C. Ely Fund

Southern California Edison Co.....	\$50.00
Mechanics Nat. Bank, dividend cut 1/2 Jan. 1933; dividend passed July 1933	
	<hr/>
	\$50.00

Frank L. Day Fund

Canadian National Railway .....	\$135.00
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Herbert Terry Fund

Missouri Public Service Co.....	\$100.00
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James H. Davenport Fund

Monongahela West Penn Pub. Service Co. ....	\$55.00
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was presented to the Council by the Treasurer, Dr. Jesse E. Mowry, and it was moved that it be referred to the House of Delegates for adoption. So voted.

Adjourned.

Respectfully submitted,  
J. W. LEECH, M.D., *Secretary.*

RHODE ISLAND OPHTHALMOLOGICAL AND  
OTOLOGICAL SOCIETY

A meeting of the R. I. O. & O. Society was held at the Green Room of Peters' House, Thursday, December 14, 1933, at 8:30 P. M., and was largely attended.

Paper, "The Lingual Thyroid," by Dr. L. B. Porter. Reports of interesting cases by members followed.

GORDON J. MCCURDY, M.D.,  
*Secretary.*



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# THE RHODE ISLAND MEDICAL JOURNAL



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OF MEDICINE  
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VOLUME XVII  
No. 2

Whole No. 293

PROVIDENCE, R. I. FEBRUARY, 1934

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## REASONS WHY YOU SHOULD SPECIFY

*continued from last month*

"Prior to spawning, the livers are usually heavily loaded with fat, and the vitamin concentrations are correspondingly reduced. With the formation and ripening of the reproductive elements, there is both a transference of fat and vitamins from the

## 2. Best Season of Year for Catching Cod Fish\*

liver to the gonads, which occurs to a much larger extent in the female than in the male, and a utilization of a proportion of the fat." "The cod spawn in these (Newfoundland) waters mainly in May and June." "The great proportion of cod liver oil is normally made during the months of July and August after the spawning is over and when the fish are feeding heavily first on caplin and later on squid." "The richest vitamin oils will, therefore, be obtained in areas where abundant food supplies for the fish are available and at seasons when the oil content of the livers tends to be low." "This we believe to be the explanation of the undoubtedly high vitamin value of the oil yielded by the cod caught in Newfoundland waters."

*to be continued*

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\*J. C. Drummond and T. P. Hilditch: The Relative Values of Cod Liver Oils from Various Sources, His Majesty's Stationery Office, London, 1930.

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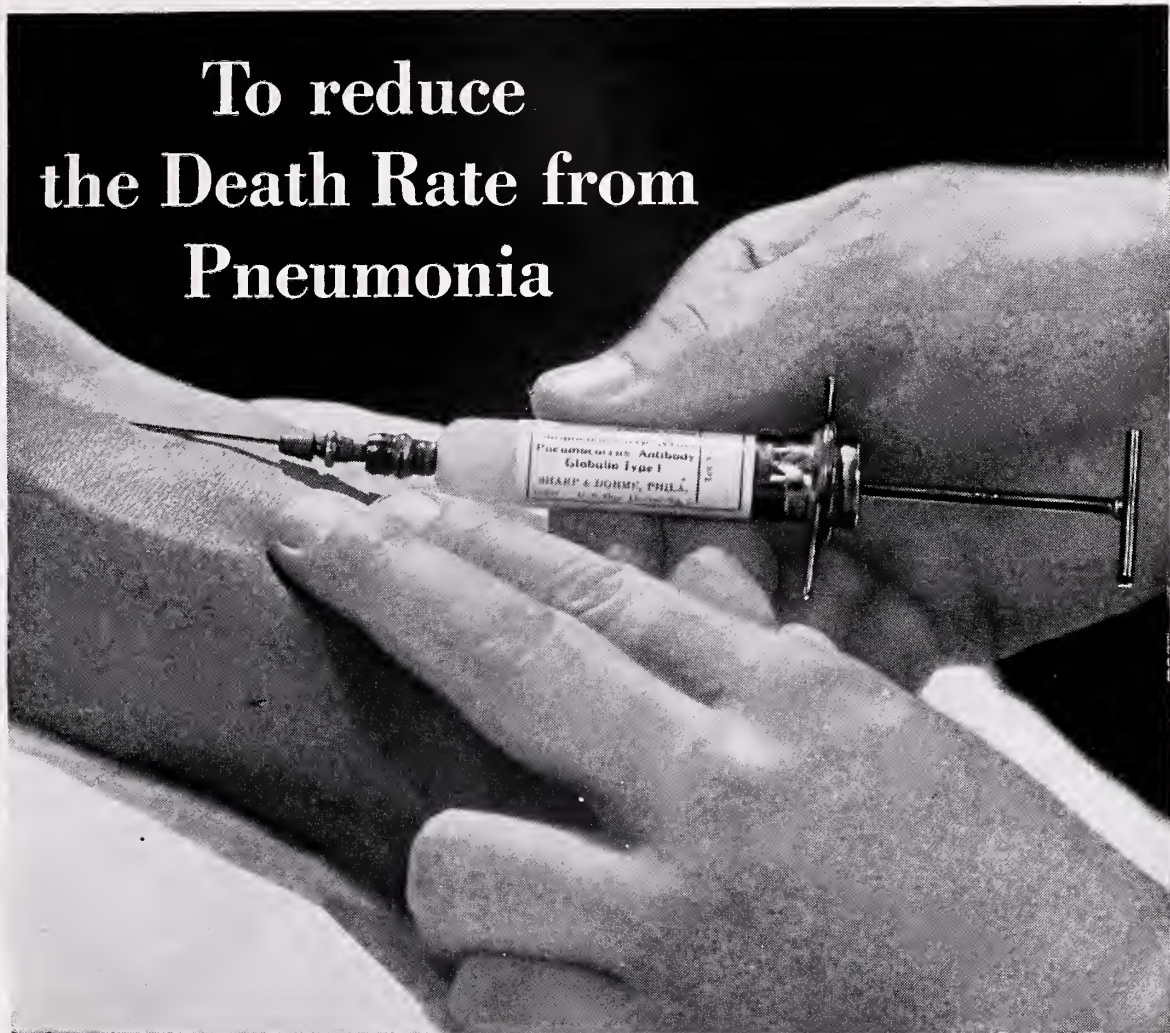
May we send you a simple, compact infant feeding formulary—and other literature which you will, we believe, also find helpful? Address The Borden Company, Dept. R 124, 350 Madison Avenue, New York.



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VOLUME XVII {  
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## ORIGINAL ARTICLES

### ADDRESS BY THE RETIRING PRESIDENT OF THE PROVIDENCE MEDICAL ASSOCIATION

DR. J. W. LEECH

167 ANGELL STREET, PROVIDENCE, R. I.

It has long been my conviction that a retiring president should be so, not only in deed, but also in word. With this thought in mind, while conforming to the requirements of our constitution and by-laws which prescribe an annual address by the President, it is my purpose not to weary you by a long review of the Society's accomplishments or detailed suggestions as to future activities. Whatever these remarks may lack in wisdom or wit will be amply compensated for by the soul of the latter—brevity.

I feel, however, that I should be lacking in graciousness if I failed to take advantage of this opportunity for expressing to you my very real appreciation of the honor you have bestowed upon me in electing me to preside over our sessions for the past year. It has been an honor and a pleasant duty, and I thank you. I wish, also, to express my sincerest appreciation of the support that has been accorded me by every member of the Association during my tenure of office and especially to those members who have so willingly and ably responded to my request to present papers for our mutual enjoyment and advancement.

I am sure that there will be no dissent to the statement that the year 1933 has been the most difficult for our profession since the entire nation entered the valley of economic depression. Greater demands for gratuitous services and failure to receive expected remuneration for our services to private patients, often through no fault or unwillingness on their part, have brought closely home to us all the change in the economic status of the physician. These are tangible results of the painful trials of the nation as they affect us as physicians and are made manifest and can be measured in lowered incomes and the enforced deferment of certain enjoyments of the practice of medicine—new

books, new equipment, advanced study among our fellow physicians away from our own small circle of activity. But what of the intangible changes which impinge on our profession? What are the implications of the increasing proposals pointing to the socialization of the practice of medicine? I refer especially to proposals for health insurance—compulsory or voluntary, with or without state subsidies—to plans for hospitalization insurance, and, perhaps of greatest import, the tremendous possibilities for good and evil of the permissive allocation of public money under the Federal Emergency Relief Administration for the payment for medical services rendered to recipients of public aid through the agency of governmental work projects.

This latter movement is the entering wedge of State medicine. It is not unlikely that measures providing for the payment of medical services adopted for the emergency will be transmuted into a degree of permanency which implies a complete readjustment of the practice of medicine.

What shall be the nature of our reaction to these threatened changes in our status as physicians? Shall we adopt the docile attitude of silent acceptance as in Germany, or shall we pattern our attitude after that of our British brethren, who, in truculent and almost supercilious mood, refused to have anything to do with the government's proposals, only to have crowded down their throats a Lloyd George panel system? Neither of these attitudes are desirable nor defensible. We must recognize that there inevitably will be more rather than less socialization in the practice of medicine and in that realization we should adopt not alone a spirit of co-operation and counsel with the proponents of measures of this nature, but should initiate plans which, while advancing the cause of better medical care for the people and assuring the economic and cultural status of the physician, shall not allow the sacrifice of the high ideals of the medical profession nor the destruction of the inalienable freedom of the individual.

The medical profession in this country, built upon the firm base of county medical society and through the State Medical Society culminating in

the American Medical Association, is the logical leader in any reconstruction or readjustment of medical practice. This leadership derives its force and authority in the last analysis from the co-operative effort of the individual physician with his fellows, and there lies the duty and opportunity of every one of us. Co-operation between the whole medical profession and all the other elements of our social order will without the shadow of a doubt solve the problems which confront us as a profession, even as nation-wide co-operation will surely lead this nation out of the Slough of Despond of the present economic depression.

### ABDOMINAL EMERGENCIES IN INFANCY AND CHILDHOOD\*

By HENRY W. HUDSON, JR., M.D., F.A.C.S.

66 COMMONWEALTH AVE., BOSTON, MASS.

"The adult may safely be treated as a child, but the converse can lead to disaster." Barrington-Ward<sup>1</sup> wrote in his *Abdominal Surgery of Children*. It has become increasingly apparent that the child cannot wisely be regarded as a miniature adult and that the incidence of disease in this age group and the individual's reaction to his disease differ quantitatively and qualitatively to a degree that warrants special consideration. It occurred to me, therefore, on receipt of your President's kind invitation to address this society, that my own interest in the surgery of this age group might be shared by many of you.

If one surveys the medical statistics from a general hospital for children, one is impressed by the high incidence of non-traumatic abdominal emergencies requiring surgical therapy, and by the percentage stability (over a period of years) of the various lesions which together constitute this group. If it can be shown that this group is statistically important, that its components are amenable to treatment, and that diagnostic inaccuracy is responsible for preventable child deaths, our professional interest is demanded. In Table No. 1 appear the total admissions to the Boston Children's Hos-

pital for a five-year period and the diagnoses which we are to discuss.

TABLE I

CHILDREN'S HOSPITAL, BOSTON, 1928-1932

Admissions, Medical	6,216
Surgical	6,764
Orthopedic	2,946
Otolaryngologic	12,143
	<hr/> 28,069
Appendicitis	717
Congenital hypertrophic pyloric stenosis	181
Congenital intestinal obstruction	60
Intrinsic, small intestine	22
Extrinsic, small intestine	12
Ano-rectal	28
Meckel's Diverticulum	30
Intussusception	90
Peritonitis, metastatic	29
	<hr/> 1,107

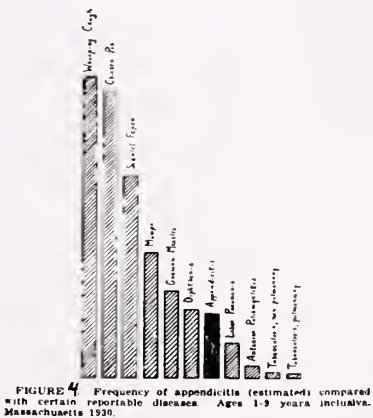
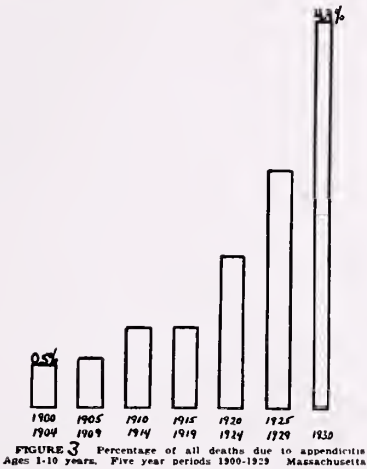
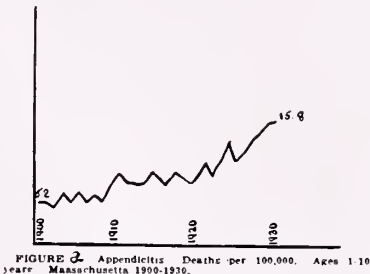
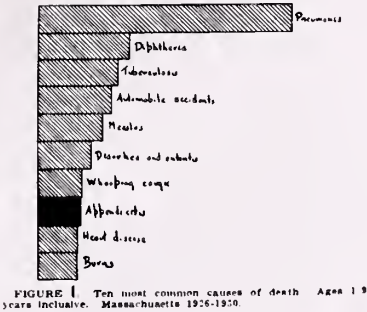
It is evident that one of every twenty-five children admitted to the hospital, or one of every six admitted to the general surgical wards, is received because of an acute abdominal emergency. Our discussion will be restricted to the more common lesions although we are not unaware of other abdominal emergencies of relative infrequency.

#### *Appendicitis*

Although it is common knowledge that appendicitis occurs in infancy and childhood, its frequency is not generally recognized. This is manifested by the prominent position appendicitis occupies in the tables of the causes of death in this age group, and by the almost universal delay in establishing the diagnosis in the child. In 1932 we called this to the attention of the local profession and desire now to reproduce certain figures from our publication.<sup>2</sup> It is evident that appendicitis is an important factor in the death rate of childhood. The cause is not difficult to demonstrate. Dr. George D. Cutler<sup>3</sup> reported before the New England Pediatric Society his experience in three hundred operations for appendicitis in the Boston Children's Hospital. He considered drainage necessary in 238 or 79.3%! In a personal group of 71 emergency operations studied two years ago, drainage was instituted in 59.1%. Again, in an analysis of two hundred consecutive operations by the staff, we found that at operation abscess or localized peritonitis was present in 31% and diffuse peritonitis in 16%. As we see appendicitis, then, perforation has occurred at the time of admission in well over half. In the last study mentioned the average known duration be-

\*Read before the Rhode Island Medical Society, June 1, 1933. From the Surgical Departments of the Boston Children's Hospital and the Harvard Medical School.

I wish to acknowledge the courtesy of Surgery, Gynecology and Obstetrics and of Doctors Lanman and Mahoney for permission to reproduce Table No. 2.



fore admission was 3.2 days for the abscess group and 3.1 days for those with diffuse peritonitis. All of the deaths (63 in 1750 patients or 3.6%) occur in the complicated cases. Since we cannot demonstrate appendicitis to be a preventable disease we are left with the alternative of preventing the death of the child with appendicitis.

Deaths may be prevented by early diagnosis and prompt operation. It is never safe in childhood to delay operation in the hope that the inflammation will subside. The pursuit of an expectant policy may save an occasional laparotomy but will be the cause of more deaths. We can neither confirm nor deny the theory that the younger the individual the weaker the appendiceal structure; nor can we alter its structure. But there is no question that the sequence of inflammatory, or obstructive<sup>4</sup> and vascular changes may take place with great rapidity. A recent patient may illustrate this point.

M. P. No. 163369, the two-year-old daughter of a physician, awakened at 7:20 A. M. She was irritable when being dressed and, instead of walking downstairs, sat on the floor and cried. When offered breakfast she vomited. At 8:30 her rectal temperature was 99.8. Her father noted local

tenderness and muscle spasm. At 12 N. her appendix had been removed. It was gangrenous, but not perforated, four hours and forty minutes after the first symptom.

Perforation within six to eight hours of onset is not rare.

The diagnosis is best made by considering abdominal pain, nausea and vomiting, with slight fever, as appendicitis until proved otherwise. In our experience there is a complaint of pain in 99.5% (199 or 200). The pain, however, is not necessarily severe and this may be a reason for error. It has been said that "children with pneumonia or other febrile diseases sleep for long stretches but the child with abdominal pain will not sleep or let anyone else sleep." Our experience has differed and it has been no rarity to waken a child for examination and find unmistakable evidence of acute appendicitis. Nausea or vomiting, usually preceding pain, has been present in 92.8%. Local tenderness is of the greatest significance and was noted on abdominal or rectal palpation in 94.4%. Muscle spasm was recorded in 83.4%. To accurately note muscle spasm depends on a patient approach, prolonged examination, and on experi-



ence with the child. The degree of spasm expected of the adult with appendicitis will often indicate peritoneal involvement in the child. Leucocytosis, commonly twelve to twenty thousand, is the rule but one has seen gangrenous appendicitis with a leucocyte count of 8,500. There is usually a polymorphonuclear increase but again one must interpret the differential count in accordance with the age, remembering that there is a relative lymphocytosis until the fourth year. A finger cot for rectal examination is more useful than a blood counting pipette. Fever of 99-101 may be expected but the temperature may be normal, particularly in appendiceal obstruction.<sup>4</sup> Again, a temperature exceeding 101 should suggest peritoneal complication or a disease other than appendicitis. The pulse rate is commonly elevated and the tongue dry and coated. The sex incidence is not noteworthy.

Prevention of deaths from appendicitis seems possible only by means of education. The public must be informed that to lightly regard persistent "stomach ache" is to court disaster. It should be the duty of the physician not only to familiarize himself with the clinical picture of appendicitis in early life but also to instruct his clientele that abdominal pain is a danger signal to be heeded. Public education can accomplish much as experience in Philadelphia has demonstrated.<sup>5</sup>

We have considered a disease in which prompt diagnosis and immediate operation are the essentials. We now turn to a group of obstructive lesions of the gastrointestinal tract in which time spent in accurate observation and preoperative preparation are of great importance.

*Congenital Hypertrophic Pyloric Stenosis*

This obstructive lesion is of unknown etiology and, although symptoms may not appear for several weeks, is best considered a congenital anomaly. There is an increase, both in size and number, of pyloric muscle fibers, particularly those circularly arranged, which results in an annular constriction of the lumen of serious degree.

The signs might be anticipated from the character of the lesion and they do, indeed, follow a pattern that might be forecast. The diagnostic criteria are projectile vomiting soon or immediately after feeding, failure to gain or loss in weight, infrequent scanty stools, visible gastric peristalsis passing from left to right (occasionally visibly reversed just before vomiting) and a palpable pylorus which has been likened to an olive. The vomitus does not

contain bile, a feature which serves to differentiate this lesion from certain other types of obstruction encountered beyond the pylorus. The palpable pyloric tumor is pathognomonic and was recognized by one or more examiners in 199 of 200 cases. The sex incidence is striking, 84.7% of 425 cases occurring in males. The onset of symptoms is typically in the third week but there are wide variations. The youngest individual to present symptoms was seven days old. X-ray examination is confirmatory but is seldom employed in our clinic.

One recognizes many causes of vomiting in the newly born and realizes that congenital hypertrophic pyloric stenosis is not a common disease. Some reports dealing with the high percentage of successful non-operative treatment suggest that the cases under observation were not, in fact, congenital hypertrophic pyloric stenosis, as the percentage incidence is out of proportion to observations in this part of the country. The reports by Lanman and Mahoney<sup>6</sup> and others indicate beyond all reasonable doubt that (1) with careful pre-operative preparation with parenteral fluids, (2) the Fredet-Rammstedt pyloromyotomy with meticulous technic, and (3) a simple post-operative feeding schedule, a plan of treatment is available which is far superior to any non-operative method. I reproduce a table by Lanman and Mahoney.<sup>6</sup>

TABLE II

Years	Serial number.	Number of cases.	Deaths.	Mortality per cent.
1915-1923	1-125	125	13	10.4
1923-1928	125-275	150	11	7.0
1928-1931	275-425	150	3	2.0

It is gratifying to report 122 consecutive cases from the Children's Hospital operated on without a death. These are all proven cases and in but one instance has operation been performed when the characteristic lesion was not demonstrated.

The one instance of incorrect preoperative diagnosis in the 122 cases occurred in a patient whose right kidney was mistakenly considered a palpable pylorus. The obstructive lesion she presented was due to congenital atresia of the jejunum, an example of the group of conditions we have next to consider.

*Congenital Obstruction of the Small Intestine*

This is the title of the paper by Ladd,<sup>8</sup> based on a series of 60 cases observed in the Boston Children's Hospital. Two types of obstruction are described, intrinsic and extrinsic.

Intrinsic obstruction, complete or incomplete, results from failure of recanalization of the bowel lumen following the normal developmental epithelial proliferation which temporarily converts it to a solid cord.

Extrinsic obstruction occurs as a result of incomplete rotation of the post-arterial segment and faulty mesenteric attachment. This takes place in the third month of fetal life during which the herniated intestine returns to the coelomic cavity.

The presenting signs in those instances of complete obstruction are noted soon after birth. There is persistent projectile vomiting with bile in the vomitus, distension may or may not be present depending on the locus of the obstruction, visible peristalsis, and alteration in the amount and character of the meconium. Since this developmental arrest takes place before the end of the third month, and since meconium does not accumulate until later, it is evident that the meconium will differ from the normal. By means of a special stain, a film of the meconium may be examined and if keratinized epithelial cells are absent (Farber's<sup>9</sup> test) there is presumptive evidence of atresia at some point in the alimentary tract. If the possibility is borne in mind, the diagnosis is not difficult and examination of the meconium is corroboratory. The preoperative localization of the obstruction is possible with a high degree of accuracy by means of X-ray examination of the abdomen, without ingestion of opaque material. The gas above the obstruction and its absence below are striking.

When obstruction is incomplete, symptoms may be delayed for months to years. Farber's test is not applicable nor is the X-ray method described. However, a barium enema may indicate malposition of the colon, and a gastro-intestinal series may demonstrate incomplete or intermittent intestinal obstruction.

For the relief of intrinsic obstruction various anastomoses may be done with fair promise of success. The collapsed, apparently rudimentary, bowel below the obstruction may dilate surprisingly well after operation.

For extrinsic obstruction due to faulty rotation and abnormal mesenteric attachment Ladd<sup>10</sup> has advised an operation which is effective. It consists in, reduction of volvulus often present because of the rudimentary stalklike mesenteric base, and division of the posterior parietal attachment of the colon and its displacement to the left and away from the underlying obstructed segment of the

bowel. This he considers a restoration to an earlier, but less hazardous embryonal stage.

The colon may be involved in atresia but in our experience less often than the small intestine. Multiple points of interruption in continuity are encountered where the total defect exceeds that compatible with life.

#### *Ano-rectal Anomalies*

The distal end of the alimentary canal is not infrequently the site of anomalies including obstruction. Failure of proctodeum and rectal pouch to unite with a continuous lumen occurs and in several different ways. One might anticipate few diagnostic errors but such is not the case. Certain confusing factors may be mentioned.

The anus may be developed and on external inspection appear normal, even though it is not continuous with the rectum. The cloacal duct may persist as a fistula between rectum and bladder, urethra, or vagina. If the source of meconium is not accurately observed diagnosis may be delayed. In one experience, meconium had been noted on the diaper and a normal rectal temperature recorded for six days preceding admission. In this instance there was a normal anus separated from the rectum by several inches and a patent cloacal duct through which meconium entered the bladder to be discharged through the urethra.

Operation is best done through the perineum with care to preserve the sphincter which is usually present. When separation between anus and rectum is extreme, colostomy followed after an interval by perineal operation is indicated. In the preoperative estimation of the degree of separation we have found Wangenstein's<sup>11</sup> method valuable. With the infant inverted a marker is placed at the anal site and the distance between it and gas in the blind end of the rectum is estimated by X-ray examination.

Following establishment of continuity, months to years of supervision and dilatation may be necessary.

#### *Meckel's Diverticulum*

We have observed a relatively large series of children suffering from the various accidents for which Meckel's Diverticulum may be responsible. Between 1919-1932 (inclusive) 43 cases entered the hospital, 11 in 1932 alone.

This structure described by Ruysch<sup>12</sup> early in the eighteenth century and more thoroughly considered by Meckel<sup>13</sup> a century later, is a remnant of

the vitello-intestinal duct and occurs in approximately 2% of individuals. It varies markedly in size, shape, position, and histologic structure and is capable of producing several symptom complexes which we have classified as follows.

### *Meckel's Diverticulum*

- A. Gastric type mucosa with ulceration.
  1. Without perforation but with hemorrhage.
  2. With perforation and with or without hemorrhage.
- B. Advancing point and presumable cause of intussusception.
- C. Diverticulitis with acute inflammation and necrosis.
- D. Intestinal obstruction, other than intussusception.
- E. Umbilical fistula.
- F. Enterocystoma.
- H. Duplex ileum.
- I. Mesenteric cyst.
- J. Tuberculosis of Meckel's Diverticulum.

We have not encountered neoplasm, enterocystoma (of this type) or tuberculosis.

Ulceration of Meckel's diverticulum with mucosa similar to that of the stomach. In 67% of the specimens examined microscopically, mucosa identical with that of the stomach was present. It has been shown<sup>14 15</sup> that a gastric-like secretion may be present. Peptic ulcer may occur and when present is situated in the ileum adjacent to the diverticulum or in a part of the diverticulum presenting mucosa other than gastric. In our cases the ulcers were acute but chronic ulcers have been reported.<sup>15 16 17 18</sup> Clinically there is a history of chronic interrupted, or acute melena, abdominal discomfort or paroxysmal colicky pain, nausea and vomiting. The blood may be fresh or digested, mixed with or separated from the feces, and the amount may be slight or sufficient to cause death from hemorrhage. The case summary illustrates not only the symptomatology but also the second operation made necessary through failure to recognize the lesion.

S. R. No. 151852, a girl of five years, became ill in May, 1931, with acute abdominal pain and the passage of a large amount of blood by rectum. In a local hospital her appendix was removed. There was said to have been free fluid about the appendix. Two weeks after operation she was discharged and one month later the symptoms returned. She re-entered the same hospital and her symptoms subsided within four days. On August 3, 1931, she again became ill with severe colicky pain just to the right of the umbilicus, vomiting and the passage of considerable amounts of blood with her stools. On admission to the Children's Hospital there was moderate abdominal distension and tenderness to the right of the umbilicus but above and mesial to the appendix scar. A presumptive

diagnosis of Meckel's diverticulum was made and operation performed. Eighteen inches above the ileocecal valve a small, injected diverticulum was demonstrated and resected. Her convalescence was gratifying and she was discharged ten days later. She remained well. Examination of the diverticulum showed acute inflammation and a mucosa similar to that of the stomach.

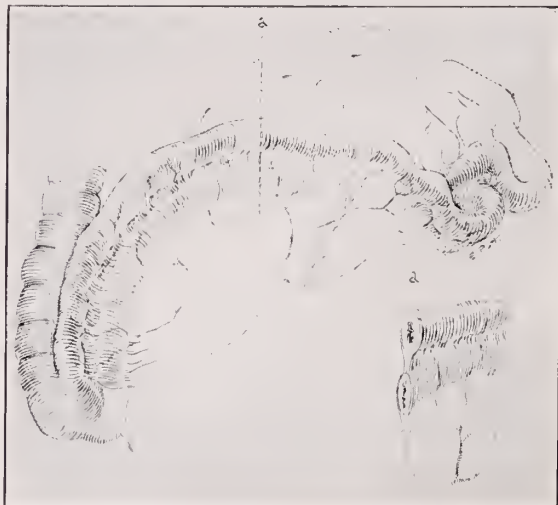
Meckel's Diverticulum as advancing point of Intussusception. There have been fourteen instances. The clinical picture is identical with that of idiopathic intussusception which we will consider.

Diverticulitis. The signs and symptoms are similar to those of appendicitis. Preoperative differentiation may be impossible and is not important if the surgeon *does not fail to examine the ileum* whenever the appendix is not surely the source of the symptoms.

Intestinal Obstruction other than Intussusception occurred in seven of the forty-five cases reported.

Umbilical fistula. It is in this type that the studies demonstrating gastric secretion<sup>14 15</sup> have been made.

Duplex ileum. The drawing indicates the anomaly.



DRAWING OF DUPLEX ILEUM OR MECKEL'S DIVERTICULUM.

No communication with ileum was demonstrated. Resection of the segment between line *a* and the base of the mesentery relieved hemorrhage from the intestinal tract for eighteen months. Microscopic examination of the resected segment (9.5cm.) demonstrated mucosa of gastric type and mucosa similar to that of the small intestine. An acute ulcer was demonstrated.

The symptoms were severe intestinal hemorrhage at 3 months and again at 6 months of age. A resection of a segment of the duplex ileum or diverticulum was performed in January, 1932. The infant was entirely well in March, 1933.



We are inclined to the view that reduplication of the ileum and certain types of mesenteric cysts are, in fact, incarcerated (within the mesentery) Meckel's diverticula.

### *Intussusception*

Intussusception is the most dramatic and one of the more common abdominal lesions. An analysis of 372 cases from the Boston Children's Hospital has just been completed. From this analysis and other reports, notably the monograph of Clubbe,<sup>19</sup> certain facts are apparent.

The etiology is unknown, although several theories have been advanced. In only 8% of 372 cases were positive etiologic factors noted. They were: Meckel's diverticulum in 14 instances, intracecal polyp in 2, enterocystoma (of cecum) in 1, lymphoma in 1, and in 7 instances intussusception followed a prolonged nutritional disturbance with enteritis.

Characteristically the history obtained is so constant that it has been said that the diagnosis can be made over the telephone. An infant under a year, and commonly about seven months old, suddenly exhibits evidence of acute severe, paroxysmal, and colicky abdominal pain with shock. He cries out in pain, flexes the thighs on the abdomen, becomes pale or cyanotic and may perspire freely. After a variable period, the pain ceases, evidence of shock is no longer present, and the infant may appear very well until the next paroxysm. The paroxysms occur irregularly but with a tendency to greater frequency. Usually, mucus and later mucus and blood are expelled from the rectum. Vomiting occurs, but if not present does not exclude intussusception. On examination there may be evidence of shock and frequently the intussusception is palpable as a sausage-shaped mass somewhere along the course of the colon. If it has advanced sufficiently, the advancing point may be palpated by rectal examination or it may even protrude through the anus.

In instances of difficult diagnosis, X-ray examination with barium enema is valuable.

The sex incidence was male 61%, female 39%.

We are cognizant of non-operative methods of reduction by manipulation and by air or fluid instilled by rectum, but believe firmly that no method offers the same insurance of reduction as laparotomy. Operative results are good. In the 60 cases received within thirty-six hours of onset in the past five years, there were no deaths. Poor results are due to late diagnosis, and there is a striking parallel

between mortality rates and duration of symptoms before operation. The results have improved over a period of years, but the possibilities of improvement are limited until patients are referred earlier.

As in the case of appendicitis, deaths are preventable and responsibility rests directly on the parent who fails to call the physician or on the physician who fails to recognize the emergency.

### *Peritonitis*

Discussion of this condition was contemplated with temerity. It is easier to discuss, however, than to be confronted with a child suffering from peritonitis of this type. Primary, ideopathic, metastatic, are some of the qualifying terms applied to this peritonitis, streptococcic or pneumococcic, which strikes suddenly and very, very often fatally. The pathogenesis has not been demonstrated. The theory of infection ascending through the female genitalia is not adequate since males may be affected, nor is the bacteriologic evidence impressive. Commonly, a history of upper respiratory infection, perhaps of little apparent significance, is obtained. There may be improvement and then, suddenly, the child is prostrated, there is high fever, vomiting, abdominal pain and distension. Prostration and toxicity are extreme and the pulse is rapid and of increasingly poor quality. Vomiting is frequent and exhausting. Bile and intestinal secretions very soon appear in the vomitus. There is diffuse abdominal tenderness and often, except in infants and moribund children, generalized muscle spasm. Shifting dullness may be demonstrated and on auscultation there may be ominous silence.

The abdominal localization arrests the attention, but not infrequently the peritonitis is but one manifestation of a more general infection, septicemia. There may be associated localizations of the infection, as pleuritis, purulent pericarditis, meningitis, osteomyelitis, or suppurative arthritis.

Treatment is difficult to evaluate. One cannot hope to drain the entire peritoneal cavity by means of drains introduced through one or the other quadrant. Nor will such action alter the septicemia or infection localized elsewhere. Two widely divergent views are held. The one embraces early laparotomy with introduction of drains, the other demands a "hands off" policy until and if there is obvious localization and an abscess to drain.

Supportive measures are indicated and this is best afforded by the administration of parenteral

(Continued on page 25)

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## EDITORIALS

### THE STUDY OF MEDICAL HISTORY

Medical science advances occasionally by bounds, spurred on by the stimulus of great discoveries, but more often by painful, halting steps through the debris accumulated as the result of past errors. Medical history chronicles the achievements and mistakes of the past. The story of the great medical discoveries is of great interest and its study tends toward intelligent practice of the art. Knowledge of the great errors which have been committed in

the past is of greater practical importance, lessening the chance of their repetition in the future. The system of medicine instituted by Galen, the influence of Avicenna, the operation of the School of Salerno, are at present of only academic interest. The immediate reaction of the profession to the discovery of the contagiousness of puerperal fever, and to the first demonstration of surgical anesthesia shows an aspect of medical psychology which is not subject to rapid change. The history of venesection, the vogue of Perkins' tractors, and the treatment of typhoid fever by ice baths are practical topics for the modern practitioner who wishes to avoid similar errors.



Medical history is taught to a limited extent in the universities; it is studied in some national societies; but its principal field up to the present time is in small, local clubs. These intimate, friendly groups provide an invaluable training ground for the more formal discussions of larger societies. To Providence, already fortunate in the number of such small societies which are actively functioning, we welcome the Providence Medical History Club. May its object, stimulation of medical history in the community, be fully realized.

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### SKULL FRACTURE

Some time ago, a prosecuting attorney was given evidence, to show that a death had been caused by assault, disclosed by gross discolorations and contusions. After sifting the findings, he declared it would be a hard case in which to obtain a conviction, because the examination had disclosed no broken bones. To the police and judiciary departments, fractures play a role of undue importance, and nowhere is this more noticeable than in fractures of the cranium.

That a fracture of the skull, without injury to the brain, is of very little importance, has been taught in recent years by the use of Roentgen rays, and it is obvious that in the past, skull fractures often existed where they were never expected. It is indeed surprising to find the great number of linear fractures of the cranium, which one discovers, if films are taken in a series of head injuries, in which the evidence of trauma, both clinically and from the history, are not at all alarming. In automobile accidents to pedestrians, skull injury is generally secondary to the impact from the machine, and is caused by the fact that the injured person hits his head on the pavement when he falls. In such cases, the report "fractured skull" carries little or no evidence of recklessness on the part of the operator. His vehicle may have been stopped within the space of a few inches, and the primary injury may show only a contusion of the upper tibia region.

Since the exposure of from three to five films is required for a proper examination of the cranium for fracture, there arises a very pertinent question as to the value of the procedure. Symptoms arise from actual injury to the brain, or from oedema within an inflexible vault, and in by far a great majority of cases, the fracture itself is causing no symptoms whatever, indeed of itself it causes no

distress to the patient. It obviously requires no treatment. In a recent article, Dr. Dandy of Baltimore made this assertion: "A physician is considered negligent if Roentgenograms of the skull are not made, although they are of almost no service in acute injuries of the head; they are a waste of money, a misdirection of diagnostic effort, and only too frequently, if transportation is required, a critical tax on a seriously ill patient."

The expression, "fractured skull," handed down to us from the days when the diagnosis was made by sight and touch only, (and consequently the pathology was so gross as to be of bad prognostic value) must, in view of the present common findings of linear cracks, be shorn of nearly all of its old significance. To those who read many films the term, "fractured skull," is of little significance. A great part of the profession and the public at large, however, still stand in awe of the diagnosis. Particularly is this true of the police. After the examination of the injured person, the inspector listens patiently to the physician's findings: "There is a small contusion below the knee, a high fracture of the fibula, and a linear fracture of the skull. The patient's condition is not serious," but here he is interrupted by a quick question from the officer. "Doctor, did I understand you to say he has a fractured skull?" This question answered in the affirmative, the conversation is terminated by the click of the receiver, and some unfortunate motorist is held for manslaughter. Probably, insignificant as the fractured fibula is, it will cause more distress and need far more care, than the fractured skull. Out of fairness to the policeman, it should be said that if time is taken to explain, he will be found an interested listener.

With a better understanding, both on the part of the profession and the public, of the significance of the term fracture as applied to the skull, there should be a more discriminate use of films, less apprehension concerning a rather common injury and more justice shown toward motorists.

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### ABDOMINAL EMERGENCIES IN INFANCY AND CHILDHOOD

*(Continued from page 23)*

fluids (glucose and normal salt solution). Transfusion is of questionable merit. Morphine in large doses is humanitarian and probably effective in splinting the inflamed viscera. Fowler's position

may be useful. An indwelling duodenal catheter (Levine tube) prevents upper abdominal distension, relieves exhausting vomiting, and accomplishes as much as enterostomy for this type of patient.

Results are difficult to interpret because of associated lesions and other variable factors, but the impression is held that supportive measures, together with drainage of abscess, when and if localized, affords the greatest opportunity for recovery.

### Summary

One has tried to picture the more common abdominal emergencies of early life; to stress their statistical significance and the importance of early and accurate diagnosis; and to suggest the results possible by surgical methods, effectively organized.

The profession is urged not only to be familiar with the clinical aspects of the abdominal emergencies, but also through education to emphasize to lay persons the importance of vomiting, abdominal pain and melena in early life.

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## DIURETICS IN THE TREATMENT OF RENAL AND CARDIAC EDEMA\*

By MARSHALL N. FULTON, M.D.

PETER BENT BRIGHAM HOSPITAL, BOSTON, MASS.

The treatment of the edematous patient is a timely subject for two reasons. First, because everyone in the practice of medicine, whether in the hospital or in the home, is frequently confronted with this therapeutic problem. Secondly, because we find from time to time new measures that improve our treatment of edema and it is well to take stock of them. In this discussion we shall restrict ourselves to a few points regarding the use of diuretic drugs in treating patients with cardiac and renal edema, particularly that of the chronic type. Often this is the least important part of therapy. The classical measures of complete bed rest, of restriction of fluid and salt, and of the proper dietary regime will frequently by themselves prove adequate to rid the body of excess fluid. However, there are, unfortunately, accumulations of edema that are much more satisfactorily treated with diuretic drugs. The questions that perplex one are when to use these drugs wisely and safely and which ones to use. Often such questions can be answered only by trial and retrial.

It is an interesting commentary on the use of diuretics that though they have been employed for

\*From the Medical Clinic, Peter Bent Brigham Hospital, and the Laboratory of the Department of Medicine, Harvard Medical School, Boston, Mass. Read before the Rhode Island Medical Society, June 1, 1933.



many years, we are still quite ignorant as to their exact mode of action. The earlier ideas that they either improved the circulation through the kidney or acted as a stimulant to the supposedly secreting epithelium of the kidney tubule have given way to new conceptions. Some now feel that diuretics act primarily on the extra-renal tissues, effecting changes in them which cause the release of stored water. Others maintain that some diuretics act on the kidney glomerulus, causing an increased filtration of fluid from the blood; that such fluid flows rapidly through the kidney tubule without there occurring a normal reabsorption. Still others feel that glomerular filtration remains the same, but that the tubules of the kidney are affected in such a way that they reabsorb less than the usual amount of water and diuresis results. The criticism of all of these explanations is that we have little direct proof as to which one of them, if any, is correct. And though it seems likely, from experiments on the isolated kidney, that most, if not all, diuretic drugs act primarily on the kidney tissues, the final proof is not at hand. The exact mode of their action is not yet clear.

During the past year I and my associates, Drs. Davenport, Parsons and Van Auken, have conducted some experiments along these lines at the Harvard Medical School.<sup>1 2</sup> We were interested, among other things, to study the comparative effect of the different diuretic drugs when administered to normal dogs at intervals of 5 to 10 days under identical conditions.

A tabulation of our results shows essentially the same thing that is seen in patients, namely, that the mercurial diuretics, salyrgan and novasurol, are much more efficient, as a rule, than the xanthine drugs — caffeine, theobromine and theophylline. Furthermore, that following the preliminary use of one of the acid-forming salts, the effect of the mercurial diuretics is even greater than when these are given alone. Of the acid-forming salts, ammonium chloride is probably the best to use with patients. Ammonium nitrate has been employed by some, notably by Keith et al.<sup>3</sup> at the Mayo Clinic, but it carries the danger of reduction of nitrate to nitrite with resulting methemoglobinemia formation,<sup>4</sup> and it is, by and large, no more effective than ammonium chloride. It has been our experience that 4 to 6 grams of ammonium chloride per day is adequate dosage to produce the desired effect. Larger doses have been suggested but are not necessary. Some patients are unable to take ammonium chloride and

retain it because of an irritating effect on the stomach. In such instances it is well to try changing the form in which the drug is taken, or to disguise its disagreeable salty taste as much as possible in lemon or orange juice. Ammonium chloride is, of itself, a diuretic drug, apparently because the ammonia is converted to urea, releasing excess chloride which disturbs the acid-base balance of the body.<sup>5</sup> Though the exact mechanism of the diuresis which follows is not clear, it is, in effect, due to the attempt of the organism to re-establish the normal acid-base equilibrium.

Our earlier experience with the mercurial diuretics, salyrgan and novasurol, taught us that toxic effects from mercury, particularly stomatitis, colitis and proctitis, will occasionally occur. This has often deterred doctors from employing these drugs in some instances where diuretics are definitely indicated. As a matter of fact, these toxic effects were much more commonly seen in the early days with novasurol than of late with salyrgan.<sup>6</sup> In many clinics salyrgan has for this reason entirely replaced its elder brother, novasurol. Experience has shown that salyrgan may be given judiciously in repeated doses over a fairly long period without damaging the kidney and without producing these undesirable toxic effects just mentioned. An important point which should be emphasized is that the effect of salyrgan should not be judged from a single dose. Often, in edematous patients, the trial dose of  $\frac{1}{2}$  cc., which should always be administered first to determine any sensitivity to the drug, will have little effect on urine flow. Even if a dose of 1 cc. produces only a slight diuresis, one should persist and give larger doses so long as there is some diuretic response. If there is no response, there should be an interval of several days before the drug is repeated, because the mercury is largely eliminated in the urine, and a small urine flow will prevent the adequate elimination of the mercury. Even if a good diuresis occurs with salyrgan, there should be an interval of 2 or 3 days before the drug is repeated. Such a period allows both for the recovery from fatigue by the kidney and the restoration of such substances as may be excreted in excess during diuresis. If at least 2 days are not allowed to intervene before the injection is repeated, there will be less response to the second injection as well as the added danger of damage to an over-worked kidney. A good working program is to give first  $\frac{1}{2}$  cc. and to follow this at 3 or 4 day intervals with doses of 1 to 2 cc. Cases which have shown only moderate



response to 2 cc. have done well with 3 or even 4 cc., though it is seldom necessary to increase the dosage to this extent. The drug can be given either deep into the muscle of the buttock or intravenously. The intramuscular injections are very apt to be painful and if not given deeply enough may result in sloughing. For this reason the intravenous route is the one of preference. Unfortunately, a certain number of patients develop venous thromboses from salyrgan injections, particularly if the vein is traumatized unduly or any of the injection leaks out around the vein. Since successful therapy calls for repeated injections, particular care should be taken to avoid this by very careful technique, by giving the injection slowly, or by sucking back a few cc's. of blood after emptying the syringe and re-emptying the syringe of this blood before extracting the needle. If the salyrgan is diluted to 10 or 15 cc. with normal saline solution, there is less danger of producing thrombosis. Figure I indicates the advan-

ing the first six months on the wards a number of different measures were tried to combat the edema, including three injections of salyrgan, one of 1/2, one of 1, and one of 2 cc's. There was no diuretic response. It was not until the seventh month of her illness that a fourth injection of salyrgan brought about a diuresis. During the next three months she received over 20 injections of salyrgan with the results which are shown in this chart. There was an excellent diuretic response, with loss of nearly 60 pounds in weight, and almost complete disappearance of the edema. In early November she developed thromboses of the veins so that it was necessary to give the salyrgan intramuscularly, still with good effect. The urine during this time continued to show a trace of albumin, hyaline and granular casts but no new signs of renal impairment.

This patient illustrates that one should not be discouraged by the early unfavorable results of giving salyrgan, or for that matter of any diuretic drug, in instances where these drugs are definitely indicated. By judicious trial and persistence satisfactory results will often be accomplished. One, of course, cannot be too sanguine, for there are some patients who will fail to respond. It is just as poor therapy, however, to fail to be persistent in such instances as it is to give diuretics when they are contra-indicated. In this connection an unusual case report published by Wiseman last year may be cited.<sup>7</sup> Wiseman tells of a patient with hypertension and chronic myocarditis to whom he gave 270 injections of salyrgan over a period of five years without evidence of damage to the kidney. One should not infer that salyrgan can always be given without producing toxic effects. It is important to be on the watch for early symptoms of mercurial intoxication or for significant changes in the urine and to stop the drug as soon as these appear. Barring such untoward events, a careful program of repeated injections will often be strikingly effective in removing edema.

Another excellent diuretic that has recently undergone a revival in usage is urea. Urea has long been known to act as a good diuretic in certain types of cases. Last year Miller and Feldman published<sup>8</sup> some very interesting studies on cardiac patients in which they emphasized anew the value of urea in treating patients over a long period of time. They pointed out in this communication first, that the diuretic properties of urea do not weaken over periods of months or even years of continued use; second, that in properly selected cases it has no dele-

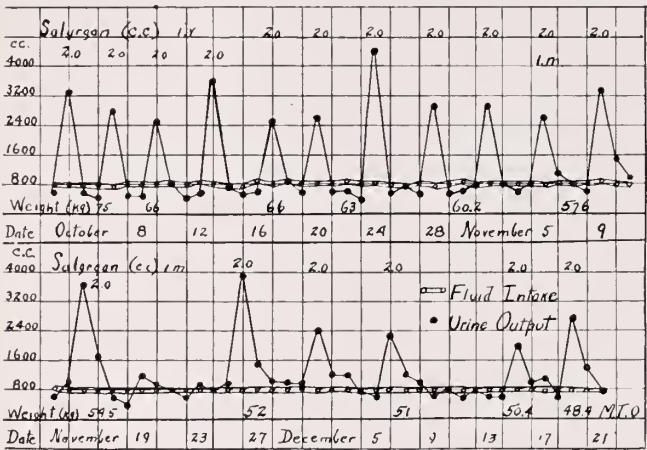


FIGURE I, CASE 1

A continuous chart illustrating the diuresis obtained by repeated injections of salyrgan intravenously (i.v.) and intramuscularly (i.m.) from October 2 to December 21.

tage of persisting in the use of salyrgan. This is a chart from the record of a patient (Case 1) who was admitted to the Peter Bent Brigham Hospital in March, 1932. She was a girl of 17 who gave a history of three weeks duration of swelling of the feet, then of the abdomen, upper extremities and face. Physical examination showed generalized edema with fluid in the abdominal and pleural cavities. The urine, which was very scanty in amount, showed a specific gravity of 1027, a large trace of albumin, and granular and hyaline casts. There was no blood in the sediment. There were a good many features of the so-called nephrosis syndrome. Dur-

terious effect on the patient or his kidneys; and third, that it tends to act as a prophylactic against the recurrence of edema in cardiac patients who have recovered from a bout of congestive heart failure. One of their patients took daily between 30 and 60 grams of urea practically uninterruptedly for over 2 years. To those who can tolerate it—and some cannot because it is upsetting to the stomach—it can be given in coffee, fruit juice or tomato juice in 15 to 30 gram doses two or three times a day. Patients under such a regime should, for a time, be under careful observation, lest there occur an accumulation of nitrogen as shown by the nitrogen level of the blood. In general it is inadvisable to give urea to patients with a fasting blood urea nitrogen of 60 mg.% or over, or to continue using it if the blood urea nitrogen rises to 80 or 100 mg. That such a rule does not always hold is shown by the excellent effects seen in the patient illustrated in Figure II. This patient (Case 2) was fed urea even

low 'phthalein excretion of 15%, secondary anemia and moderate hypertension, he was at first thought to have an acute exacerbation of chronic nephritis. His course is shown in Figure II, which is a continuous chart extending over a period of 3½ months. The circles represent fluid intake, the dots urine output, each dot being the average for a three day period. The x's indicate the blood urea nitrogen as shown by the scale on the right, the figures at the bottom of the chart the weight in kilograms. During the first month—which was the second month of his illness—there was marked improvement in regard to nitrogen retention, but a gain of 11 kg. in weight. On May 10, urea was started, 30 grams twice a day. There followed an excellent diuresis with loss of 11 kg. in weight. The urea was continued until June 10, in spite of a rise of blood urea nitrogen to 118 mg.% It was then stopped with a resulting prompt fall in urine output and a rise in weight from 70 to 73 kg. Following resumption of urea on June 18, diuresis returned and persisted, the weight was reduced another 14 kg. and the blood urea nitrogen fell to a normal level. During this period of improvement the 'phthalein rose gradually from 15 to 48% and there were other signs of improved kidney function. It was felt from his course that this patient was suffering not from chronic but from an initial acute nephritis. He illustrates very well the value of such relatively mild diuretics as urea in this type of renal edema, and the excellent response that sometimes may be obtained from the use of urea. It is known that some patients with renal edema will have a diuresis while taking a high protein diet. One explanation offered for this is that the increased urea formed from the protein exerts a diuretic influence.

There is insufficient time to discuss here the merits of all the diuretic drugs. It is important that the various xanthine compounds—theophylline (theocine), theobromine, and caffeine—be a part of one's therapeutic kit. Often they may be called on with very satisfactory results. Of these three, theocin has in our experience proven most effective. In doses of 5 grains administered three times of a morning, say at 7, 9 and 11 A. M., it will sometimes produce a very marked diuresis in cardiac patients. As with the mercurial drugs, there should follow an interval of several days before it is repeated. It is common experience that one diuretic may be effective when others fail. The best working plan is to find the one that will produce the desired effect in any given case. One can but mention digitalis,

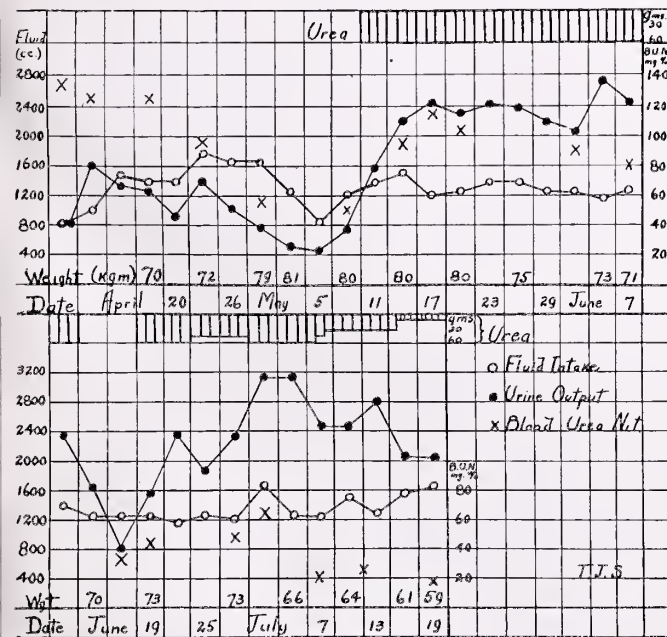


FIGURE II, CASE 2

A continuous chart illustrating the effect of urea given by mouth in doses of 60 to 10 grams per day on the urine output and blood urea nitrogen.

while the blood urea nitrogen was at a level of over 100 mg.%. He was a young man of 29 who came to the Peter Bent Brigham Hospital with the picture of acute nephritis. The urine contained a trace of albumin, had low specific gravity, and contained cellular, granular, and hyaline casts. Because of a



which so frequently brings about a marked diuresis in edematous cardiacs. The best evidence goes to show that digitalis acts as a diuretic only in so far as it improves the circulation. Not infrequently the use of Southey tubes in conjunction with diuretics will be found a very helpful means of removing edema fluid.

There is one other measure which may at times prove useful in stubborn cases. It relates to the clinical application of our knowledge that the sodium ion appears to bear some direct relation to the retention of fluid by the body, particularly that fluid stored in the extra-cellular spaces. In contrast to this, potassium, which is the chief basic electrolyte within the body cells, is less readily stored by the organism. When the kidney function is normal, potassium salts have been found to exert a diuretic effect, whereas the corresponding sodium salts, such as sodium chloride, lead to water retention. I was careful to stipulate "when the kidney function is normal," for it is well known that potassium is very toxic to the organism, and if the kidneys are damaged and it is not excreted it may produce death from its toxic effect. However, the potassium salts have been utilized successfully in producing diuresis in some patients who do not have renal damage. Barker<sup>9</sup> reports excellent results in edematous patients of this type with the use of a salt-free, low-sodium, high-potassium diet. This he supplemented by the daily administration of 5 grams of potassium chloride, which served as the salt for the diet. A number of his patients on this regime had a very good diuresis. The question has been raised as to whether these patients would not have done as well by merely being deprived of sodium, without the addition of potassium chloride. One answer to this is that potassium chloride is more acceptable to some patients as a substance with which to salt their food than is an entirely salt free diet. Figure III is a chart from one patient (Case 3) who has taken potassium chloride now for nearly a year, and who declares it is "the greatest salt that has ever come into" his house. He is a business man, 68 years of age, who was first seen in private practice in January, 1932, with advanced congestive heart failure. He had chronic myocardial disease with marked cardiac enlargement, auricular fibrillation and arterio-sclerosis. There was generalized edema and hydrothorax. He has been selected here to show the effect of potassium chloride as well as the comparative effect in some patients of theocin and salyrgan. Each entry on the chart represents a single day. The

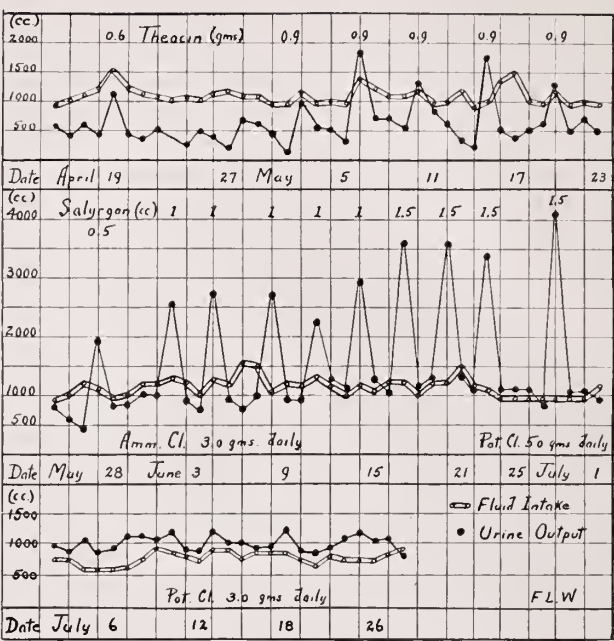


FIGURE III, CASE 3

A continuous chart to show the diuresis resulting from theocin (April 19-May 23), from salyrgan and ammonium chloride (May 27-June 28), and from potassium chloride (June 23-July 28).

observations run from April until July. One sees that during April and May the fluid intake was constantly in excess of the urine output except on the days when the patient responded to theocin with a slight diuresis. At this point salyrgan was first tried with fair results, and thereafter with ammonium chloride and salyrgan in 1 cc. and 1½ cc. doses the patient had excellent diuresis and lost most of his pitting edema. That which remained was of the soft, boggy type in the backs of the thighs. On June 23 a low-sodium, high-potassium diet was started plus 5 grams of potassium chloride a day, and after July 10, 3 grams a day. The interesting feature is that during the hot days of July his urine output was always more than his fluid intake—that is, his fluids in excess of his diet—and this in contrast to the opposite state of affairs seen during April and May, when he was constantly storing water and accumulating edema. He has been up and about ever since August of 1932, able to be out in his car, and has had no return of edema. It is reasonable to feel that in this instance either the reduction in sodium intake or the administration of potassium chloride (which he has continued to take faithfully) has had a very favorable influence on his course. This method of introducing diuresis is relatively new



and calls for further trial before it is well established. It is important to emphasize again the toxicity of potassium, the inadvisability of its use in nephritic cases, and the caution with which it should be used in cardiac patients.

In closing, there are several generalities concerning the use of diuretics which should be mentioned. One should determine as nearly as possible, when dealing with an edematous patient, whether that edema is of cardiac, renal, or of some other origin before using diuretic drugs. The relief of peripheral or body edema is practically never an emergency measure calling for immediate treatment. If the edema is cardiac in origin, several days absolute rest in bed with adequate digitalization will frequently of itself induce diuresis. Patients with cardiac edema are the ones who respond best to diuretic drugs. It is well, however, to wait several days until severe decompensation, as manifested by orthopnea, marked cyanosis, or a very rapid pulse, has abated before giving diuretics to such patients in advanced heart failure. A marked diuresis with the effort of getting on and off the bed pan is very exhausting and may be poorly tolerated by a badly decompensated cardiac; a week later the same performance may take place without undue fatigue. If the edema is of renal origin, much less can be expected of diuretic drugs. Here it is preferable to wait for an even longer time before such drugs are tried. In acute and subacute nephritis with edema, diuretics, except perhaps urea, are contra-indicated. There is no evidence that they aid in the excretion of toxic substances in acute nephritis, and they may throw unnecessary work on a damaged kidney with ill effect. As time passes and other methods of inducing diuresis have failed, small doses of diuretics may be tried in renal cases, but their effects as manifested by changes in the urine must be watched carefully. If renal function is normal as in the first case shown, salyrgan may be given and repeated so long as there is no evidence of the further development of kidney damage.

In summary, diuretic drugs occupy an important place in the treatment of cardiac and renal edema, particularly that of the chronic type. Salyrgan at the present time is our most efficient diuretic drug. It is best given along with one of the acid-forming salts, preferably ammonium chloride, and can be administered repeatedly to cardiac and certain types of nephritic patients so long as there are no untoward toxic or renal effects. Urea also is an excellent diuretic and can be given over long periods

of time. It can be used with good effect in patients with renal edema if there is not marked nitrogen retention. The xanthine drugs, theophylline (theocin), theobromine, and caffeine, still have their place as diuretics and frequently prove effective. A low-sodium, high-potassium diet, supplemented by 3 to 5 grams of potassium chloride daily, may result in an excellent diuresis, particularly in stubborn cases.

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#### OBITUARY

##### DR. WILLIAM ROBBINS WHITE

Dr. William Robbins White was born among the green mountains of Vermont at Cavendish, October 31, 1849, the son of Joseph A. White, a merchant, and Ellen (Proctor) White.

His education, after the district school period, was at Black River Academy at Ludlow, Vermont. He entered Dartmouth College with the class of '74 and was both student and, for three years, instructor. He spent two years at Dartmouth Medical College and one year at Harvard Medical School, from which he graduated in June, 1877. The following

September he began an 18 months service at the Rhode Island Hospital as interne and for 55 years he was connected with the hospital, acting as interne, as physician to out-patients, as visiting physician for 27 years, as lecturer to nurses, and finally as consulting physician.

He began practice in Providence in December, 1879, and continued in active work until a few months prior to his death.

He was secretary and president of the Providence Medical Association, secretary and president (1903-04) of the Rhode Island Medical Society, a member of the American Medical Association, of the Harvard Medical Alumni Association, of the American Academy of Medicine, the Providence Clinical Club, and the Providence Medical Association.

For many years he served as a member of the Providence School Committee.

He married, December 10, 1879, Miss Helen G. Farmer of Providence, by whom he had four children, three of whom are still living; she died July 11, 1915. He married as his second wife, Miss Margaret L. Wardle of Troy, N. Y., in August, 1917, who survives him.

Dr. White was a physician of wide experience, beloved by his patients and friends, genial and possessed with a rare sense of humor.

He seldom missed a meeting of this society, and he took an active part in its work.

He died in Providence, R. I., November 3, 1933, aged 84.

Respectfully submitted,

STEPHEN A. WELCH, M.D.,  
FRANKLIN P. CAPRON, M.D.

## SOCIETIES

### RHODE ISLAND MEDICAL SOCIETY

The following letter from the President of the Woonsocket District Medical Society was read by the Secretary. On motion made and seconded it was voted that the communication be referred to the House of Delegates for consideration:

"Woonsocket District Medical Society,  
Woonsocket, R. I.

December 7, 1933.

The Rhode Island Medical Society,  
Providence, R. I.

Gentlemen:

The Woonsocket District Medical Society desires to acquaint the members of the Rhode Island

Medical Society, as assembled, with a situation which confronts this specific branch of organized medicine in the extreme northern part of Rhode Island.

Of late years there has been an ever increasing alliance of District Nurses with State-hired or institutional physicians in the organization of various self-styled or so called Public Health Clinics, in a community covered by forty or more physicians belonging to, mostly, the Woonsocket District Society, and, in turn, most of them as well to the Rhode Island Medical Society.

The latest acquisition being, in our territory, a so called Mental Hygiene Clinic. These clinics are invariably conducted by local nurses and by physicians who represent various outside state institutions. These physicians enter this territory and ally themselves with District Nurses, who, in turn, usually hold their clinics in rooms hired in a downtown commercial building.

It would appear to this District Society that this insidious scheme of approach by a few aggressive nurses and state medical appointees is a direct and serious challenge to organized medicine's ability to control the health situation of any community. When a very few institutional physicians, or state appointees, whose very salaries are partially met by the taxes of several hundred practicing members of the Rhode Island Medical Society, can enter any community and glibly assume before the public eye and press, along with District Nurses, the self-appointed role of 'public health folks,' they thus infer that the local society and its members have no such talents or ideals. They, thereupon, organize clinics which have no social service supervision for guaranteeing economic justice, alike, to all taxpayers, both patients and physicians. We are of the opinion that organized medicine, as we understand it, can tolerate such conditions only a certain length of time before we become a total farce, as an organization.

Constructively, we advance as a more correct and harmonious procedure, both ethical and courteous, that where there seems a local need throughout the State for special clinics for the public indigent, that the local medical society, or its members, co-operate, not with nurses, or vice versa, but with State institutions for advice, co-operation and consultative opinions. Then to meet in already organized clinics in a legal and properly conducted local hospital, where the indigent may come, as they do for other clinics, and where they may be properly seg-



regated from those able to pay for services rendered. Thus can organized medical men work harmoniously under one roof, using, in addition, nursing and social service care for the general decent welfare of the indigent throughout the State.

We most earnestly ask the members of the State Society, here convened, to give this whole subject its most serious thought, for the benefit of all, since it appears to this local Society, that a serious and insidious challenge by a small handful of our number is being made, to the detriment of the larger group of hundreds of organized physicians throughout the State. It is destructive to medical morale, since a member honorably meeting the dues of organized medicine naturally expects organized courtesy and ethical practices from the fellow physicians in this organization. We cannot hope to extend our membership throughout the State, unless such guarantees can be made.

Does not the Rhode Island Medical Society, in its own right, believe the time has long since come to assert some aggression *itself*, in its control over public health matters, embryonic socialized medicine and the practices and activities of its various members themselves?

Very truly yours,

WOONSOCKET DISTRICT MEDICAL SOCIETY,  
Walter C. Rocheleau, *President*."

The following program was presented:

1. "Pulmonary Carcinoma"—illustrated by two cases autopsied at the Homeopathic Hospital, lantern slides, Dr. Constant E. Schradieck. Discussion opened by Dr. Burgess.
2. "Discussion of Thyroid Problems," W. Richard Ohler, M.D., Boston City Hospital. Discussion by Drs. Guy Wells, C. O. Cooke, E. Wing, L. I. Kramer.
3. "The 'New School' of Obstetrics," E. S. Brackett, M.D.

Owing to the lateness of the hour, and the fact that a meeting of the American Hospital Association was to be held at Charles V. Chapin Hospital the evening of the meeting, Dr. Hugh Kiene, who had a paper to present, "Medical and Surgical Causes of Mental Disease," suggested that the reading of the paper be deferred until the March meeting.

After adjournment a collation was served.

Respectfully submitted,

J. W. LEECH, M.D., *Secretary*.

#### THE PROVIDENCE MEDICAL ASSOCIATION

The regular monthly meeting of the Providence Medical Association was called to order by the Vice-President, Dr. Charles F. Gormly, Monday evening, December 4, 1933, at 8:50 o'clock. The records of the last meeting were read and approved. Letters were read from Mrs. Parnell Fisher; Dr. Douglas of Tennessee, who had lent money to a man purporting to be a Providence physician; the Rhode Island Philatelic Society reporting a meeting for doctors; and Dr. Richardson, reporting a forum on hospital financing.

#### *Nomination of Officers*

In accordance with Article 1, Section 6, of the By-Laws, the Standing Committee make the following nominations for officers and committees for the year 1934.

The Standing Committee having approved their applications, the following were elected to membership: Paul C. Bruno, George A. Elliott, Jarvis D. Case, Wallace Lisbon and Louis A. Sage.

The Secretary read an obituary on Dr. William R. White, and it was voted to spread this on the records, send a copy to the RHODE ISLAND MEDICAL JOURNAL and one to the family. The Vice-President reported for the Emergency Relief Committee. It was voted that the Secretary send the felicitations of the meeting to Dr. Charles H. Leonard, who has his 92nd birthday this month, and wish him many happy returns of the day.

Dr. R. P. Crank reported a case of bacillary dysentery caused by bacillus pyocyaneus and presented the specimen. Dr. Harvey Wellman reported a case of indulant fever. The case was discussed by Dr. Grover.

The first paper of the evening, by Dr. William N. Hughes was on "Treatment of Neuro-Syphilis"—a summary and evaluation of methods used during the past ten years. Methods vary greatly, but there has been a marked improvement in this time. The speaker stressed a careful general examination and the need to consider the patient in all his aspects. The paper was a detailed discussion of the different agencies, as sulpharsphenamine, bismuth, iodine, tryparsamid, and malaria and other fever treatments. The procedures should be extended over a four-year period. Discussion was by Drs. McDonald, Kiene, Messinger, Muncy and Hughes.

The second paper, by Dr. Paul Appleton, was on "Interesting Congenital Deformities." These are



surprisingly large in number, gross deformities averaging about 1 in 50. Some are due to injuries in utero, as the cutting of limbs by the cord, etc., but probably most start at a very early period before the embryo is well differentiated. They usually come as a surprise, although diagnosis, as by X-ray, may sometimes be made and may help in the handling of the case. Moving pictures were shown of a number of deformities. Discussion was by Drs. J. Kelley, Partridge and Buxton.

The meeting adjourned at 10:45 P. M. Attendance 100.

Collation followed.

Respectfully submitted,

PETER PINEO CHASE,  
*Secretary.*

#### ANNUAL REPORT OF SECRETARY

The Providence Medical Association held nine meetings during the year 1933, with a total attendance of 1,114, which is 51 more than last year. For several years now the attendance has been steadily increasing. The most fully attended meeting was in April, when the Diabetic Clinic held a symposium. It is of interest here to note that none of the speakers took over fifteen minutes, and previous experience had led us all to have confidence that this group would give us short and snappy papers. It is to be presumed that members come to these meetings having already done a day's work and are feeling somewhat jaded. A writer cannot be expected to exhaust an important subject even in forty minutes, and he is not well advised to exhaust his audience. All the presidents realize this and try for short papers, but without ironclad rules it is difficult to hold enthusiastic authors down. Good meetings will be better if they can be shortened.

The membership at the present time is 472.

Eighteen papers were read by members and 3 by guests; 6 cases were presented by members and 1 by a guest; 65 members and 3 guests engaged in the discussions.

The following were elected to membership: Ira C. Nichols, Gustave Pozzi, Arthur L. Springer, Nathan S. Rakatanski, Harrison F. Hyer, Russell R. Hunt, John A. Hayward, William M. Muncy, Mark Rittner, Harold Rogell, Anthony A. Iavazzo, John F. Streker, Edmund A. Sayer, Joseph E. Wittig, E. Joseph Bernasconi, George F. Conde, John H. O'Brien, Nicholas A. Pournaras, Jacob P.

Warren, George W. Webster, Ernest J. Quesnel, Casimir J. Miga, Amedeo N. Mastrabuono, Arthur E. Hardy, Charles P. Earley, Edna C. Dyar, John J. Donnelly, Paul C. Bruno, George A. Elliott, Jarvis D. Case, Wallace Lisbon, Louis A. Sage.

Edward A. Coppola was dropped for non-payment of dues.

The Association has lost this year by death: Cornelius J. Mahoney, Gordon R. Barden, Henry A. Cooke, Frederick P. Gorham, Parnell E. Fisher, Winthrop A. Risk, William R. White, T. Edward Duffee.

PETER PINEO CHASE,  
*Secretary.*

#### LIBRARY NOTES

The Library Committee acknowledges with thanks an additional contribution of \$12.50 from Dr. Harry L. Barnes of Wallum Lake. A good start has been made on the cataloguing of the Library, most of the books kept in the reading room having been classified and catalogued, so that they are now easily available. This classification has made necessary a rearrangement of the shelves, and this has been accomplished with the co-operation of the treasurer.

#### BOOK REVIEW

SENILE CATARACT: Methods of Operating. By W. A. Fisher, M.D. 267 pages, 183 illustrations. Published by Chicago Eye, Ear, Nose and Throat College, Chicago, Illinois.

In this volume several well-known ophthalmologists describe their methods of cataract extraction. The late Dr. E. Fuchs summarizes the application of surgical judgment and briefly describes his capsulotomy operation.

The rest of the work concerns itself almost entirely with intracapsular extraction. Barraquer's lengthy description of his method, 100 pages, is excellent and thorough. The Smith operation, as modified by Holland and by Fisher, is well described. Very little, indeed, is said of the several methods of extraction by forceps. The principal author stresses particularly his own modification of the suction technique and practice operating on the eyes of kittens.

The book is of value as a ready reference for points of technique in several methods of cataract operation.

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No. 3

Whole No. 294

PROVIDENCE, R. I., MARCH, 1934

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*to be continued*

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\*J. C. Drummond and T. P. Hilditch: The Relative Values of Cod Liver Oils from Various Sources, His Majesty's Stationery Office, London, 1930.

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## ORIGINAL ARTICLES

### THE SPECIFIC TREATMENT OF ASTHMA IN CHILDREN\*

By WILLIAM P. BUFFUM, M.D.

122 WATERMAN STREET, PROVIDENCE, R. I.

By specific treatment is meant treatment which deals with the specific cause or offending substance to which the patient is sensitive. This offending substance which by its presence causes the attack of asthma has been called an atopen and this is a very convenient term.

This atopen which is responsible for the trouble in an individual patient may be an inhaled substance such as pollen, animal dander, vegetable dust or the mixture of dusts known as house dust. It may be a food. There are surely many other atopens that have not been thought of.

Theoretically it would seem comparatively simple to skin test the patient with all the known atopens and treat him on that basis. Practically the problem is often of the greatest difficulty. Most patients when skin tested react to some substances, some react to a great many. If the patient is retested his reactions are often different.

If possible we must relate the tests to the symptoms and find out which atopens are actually causing the attacks. For instance, if a patient by skin test reacts to ragweed and yet there is no increase of symptoms during the ragweed season, it is evident that ragweed is not a principal cause of his trouble. If a patient reacts to egg and yet the rigid exclusion of egg from the diet causes no improvement in symptoms, we know that egg is not the chief cause of his asthma. If, however, a patient on testing reacts to a certain substance, and removal of that substance from the diet or environment causes a marked improvement in symptoms lasting over a period of months, then we can feel that the treatment is truly specific.

\*From the Rhode Island Hospital Pediatric Allergy Clinic. Read before the Providence Medical Association November 6th, 1933.

I took thirty of my own clinic cases, unselected except that their records were complete enough for study, to see how accurately they could be classified. Two were ragweed cases. That is, their symptoms were practically entirely in the ragweed season, and they showed positive skin tests to ragweed only. One was diagnosed as an early summer grass case by the same reasoning. Four were house dust cases. They reacted strongly to house dust. Clinically they seemed to be due to dust, and dust treatment caused a great improvement. One of them reacted also to ragweed, but clinically there was no increase in the symptoms during the ragweed season. Five cases were bacterial; that is, their symptoms only appeared during a respiratory infection and usually with fever. They had no positive tests except one patient who reacted to house dust and ragweed.

These twelve cases should be considered as having their symptoms due to a single cause. The other eighteen were cases of mixed and unclassified sensitization. In these mixed cases the cause of the symptoms has not been made out. A sort of shot-gun treatment is instituted, foods to which they react are left out of the diet, and inhalants are reduced to a minimum. Desensitization to a suspected atopen may be tried and vaccines may be given to control respiratory infections. The results of this treatment are variable. Most of the patients are helped a great deal, some are helped a little, and a few are not helped at all.

By more active detective work we shall probably be able to find the substance which is causing the symptoms in a few more of these cases. The more time and thought expended, the greater number of cases can be adequately explained. There is always, however, a comparatively large group of cases of which the causative atopen cannot be determined. Of these, the small group of malnourished children with severe asthma contains most of the patients that do badly.

The treatment of pollen asthma is instructive in showing the value of desensitizing injections. Rackemann<sup>1</sup> reports that of seventy such cases, thirteen were completely relieved of their symptoms. VandeVeer, Cooke and Spain<sup>2</sup> report a relief in 75% of simple pollen asthma occurring with hay

fever. In asthma with multiple sensitization the results cannot be so good.

Our own cases have varied considerably. One case came in the middle of the season with mild ragweed asthma. Instructions to stay in the city and to keep the windows closed at night were sufficient to completely relieve him. Another whose symptoms are due to ragweed was entirely unaffected by injection treatment which was given during the season. In most of our ragweed sensitive cases the symptoms are not confined to the ragweed season. In other words there is a multiple sensitization, and ragweed treatment alone does not give very good results. Change to a locality where there is no ragweed is not usually practicable for the patient.

Animal danders cause a very important group of cases. The presence of the animal causing symptoms, and the clear cut test frequently makes this situation obvious. More difficult are the cases in which the animal hair is used in some manufactured article. A good deal has been written on this subject, and the possibilities in an individual case can be worked out if one can take time to do it. Sometimes the situation is quite obvious. One patient was sensitive to dog dander, and her symptoms were proved to be due to the hair of a new doll. The symptoms began on the day the doll was given her and stopped on the day it was taken away. For at least a year she had no more asthma. Whether the doll's hair was dog hair or not was never proved. New York men have shown that hospital patients there are often sensitized to rabbit hair and get their symptoms from the hair in bedding and upholstered furniture.

Feather pillows, mattresses stuffed with animal hair, stuffed furniture, hangings and rugs are frequent sources of trouble. It is not known how much of this trouble is caused by the specific dander or feathers of the animal involved and how much is due to other dusts held by these articles. A feather pillow is a very dusty article and causes a lot of trouble, a good deal of which is doubtless due to other dusts than feather.

Animal sensitization cases are usually treated by attempts to avoid exposure. Sometimes desensitization is necessary and is likely to be at least partly successful.

The consideration of house dust as an atopen is comparatively recent. It was first recognized by Cooke<sup>3</sup> in 1922. About one-half of all asthmatics are

sensitive in some degree by skin test to a preparation of house dust. This dust is found chiefly in rooms where people live. It is not found in new houses or in new furnishings, and it is less concentrated in public buildings and halls. It is best prepared from sweepings of bed rooms and living rooms.

Autogenous house dust preparations for testing are said to be best prepared by a rather complicated process of extracting and kept in a buffered solution which will not become acid. For our material we soaked the dust in the smallest possible amount of 14% alcohol. This was used for scratch testing only.

Stock preparations both for scratch and intracutaneous testing can be bought and seem to give good results.

Positive tests are reported varying from 33%<sup>3</sup> to 63%<sup>4</sup> and higher by some foreign observers. The great difference in number of positive tests is probably due to technic. The New York Hospital stock dust preparation has been used in many foreign lands and gives the same results there as in New York.<sup>5</sup>

Although known atopens may be included in house dust, Cooke, and others<sup>10</sup> believe that house dust contains a new but unknown atopen.

Treatment consists chiefly in dust precautions. The home is kept as dustfree as possible. Upholstered furniture, rugs, hangings, and unnecessary furnishings are kept at a minimum. The house is kept rigidly clean. The bed room is as bare as possible, and it is best if it contains only an iron bed and a chair, with all clothes in another room. The pillow can be a rubber air pillow or a new kapok or silk floss one. With our outpatients we often have them enclose an old pillow and mattress in oil cloth. The bedding should be all washable. If necessary a well aired woolen blanket may be used in cold weather.

If these dust precautions do not give sufficient relief, desensitization can be tried. The results are said to be as good as in other inhalant sensitivities.

I cannot give any statistics as the dust work has only just been started, and it takes a long time to be sure of results in asthma. Two cases, however, illustrate the effect of dust treatment.

1. Gerald was a mild asthmatic, he gave no skin reactions except a + reaction to stock dust and a +++ reaction to dust from his own home. Dust precautions as outlined have almost entirely relieved him.



2. Dorothy is a moderate asthmatic. She rarely went more than a month without an attack which kept her awake a good deal of the night for a week or so. Her only positive skin tests are a + reaction to her own house dust and a large reaction to the stock dust. The stock dust given intracutaneously gave a large delayed local reaction the next day, and also what was probably a mild general reaction with wheezing. She was at Lakeside for 70 days and had no asthma there. She was sent to the hospital for relief of a severe attack and promptly cleared up there without treatment. Dust precautions are now being tried at home and she is doing better.

With children we have a fair number of food cases. Almost always the offending foods can be left out of the diet. This procedure is especially good because with children the sensitization to foods usually disappears in time. If the child can take milk there is no great difficulty in arranging the rest of the diet with foods to which he is not sensitive. Occasionally a small child is sensitive to so many foods, such as milk, wheat, and eggs, that feeding is extremely difficult. In these cases desensitization is not infrequently attempted with milk. In desensitization the milk can be given daily beginning with a small quantity, maybe one drop, depending on the degree of sensitiveness. Usually this treatment is helpful, but the child is rarely entirely desensitized, and the amount of milk that can be taken may be limited.

Bacterial cases are very common. A bacterial case is one in which the symptoms occur only at the time of a cold or infection and usually there is a fever. The greater number of bacterial cases have no skin sensitizations, but this is not necessarily true. One case, for instance, reacted to ragweed, but clinically the ragweed sensitization was of no importance. These bacterial cases are usually treated by vaccines.

There has been a great deal of dispute about the use of vaccines in asthma and how they work. In 1917 Walker described scratch tests with bacterial extracts. He considered that a positive test indicated that the patient was sensitized to the bacterium giving the test. Cooke disagreed with him, and now it is almost universally conceded that scratch testing with bacterial products does not give information as to specific sensitization.

Some men believe that intracutaneous tests with vaccines are of value in selecting the vaccine. The

reactions here are delayed reactions similar in appearance to a tuberculin test. Rackemann,<sup>1</sup> who has done a good deal of work on this point, advocates giving a vaccine which gives a good reaction on subcutaneous injection.

Vaccine treatment in asthma seems to be entirely non-specific. As in other non-specific shock therapy, certain cell activities are stimulated. Increased cell activity may favor the production of anti-bodies and may speed up detoxication.

Vaccine therapy usually gives an improvement in symptoms, and sometimes this is quite striking. It is, however, temporary, lasting a few weeks or months, and is not to be compared with specific treatment.

During 1933 I have given a stock mixed vaccine to twenty-one patients at the R. I. Hospital. Eleven out of the twenty-one were better after the treatment. Of the remaining ten only one had more than five doses, and the others did not return or returned so late that the treatment could not be properly judged. At any rate more than half were benefited, and four were given complete relief for from one to six months afterwards.

Vaccine therapy is also helpful in preventing respiratory infections. Different authors have reported from 68%<sup>6</sup> to 59%<sup>7</sup> of good results. In the current *A.M.A. Journal* Dochez, Mills and Kneeland<sup>11</sup> state that respiratory infections are shorter and have fewer complications after vaccine prophylactic therapy.

One form of treatment which is useful occasionally, especially in severe cases, is a change of residence. If relief can be obtained in no other way, it is likely that if the patient moves he will be better. This is probably because he escapes from the inhalant atopen which is bothering him. This is especially likely to happen if he goes to a hospital or sanatorium where there is a minimum of furnishings and a maximum of scrubbing.

During July, August, and September this year seven cases of asthma were sent to the Rhode Island Hospital for relief, three of them in very severe attacks. Six out of the seven were well in twenty-four hours without treatment. One case continued and was relieved by adrenalin and other medication.

During the first nine months of 1933, 8 asthmatics were sent to Lakeside. While at Lakeside 4 mild ones had no asthma. Two mild ones had very slight asthma, and 2 severe ones continued to have trouble. The average stay was ten weeks.

This benefit from hospitalization and change of residence is well known. It must be due to relief from inhalant atopens.

The results of the treatment of asthma can only be estimated accurately after several years. Walzer<sup>2</sup> after reviewing a large number of statistics considers that in 50% of cases perfect or nearly perfect results are obtained, and that in less than 20% is the treatment useless. Rowe<sup>11</sup> dealing with children had better results, only 2.7% having no relief. Rackemann in analyzing a thousand and seventy-four patients of all ages after two years found 20% unimproved and 10% dead, but states that children do better than adults.

The great majority of children with asthma can be either entirely relieved or considerably improved.

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### ASTHMA STUDY IN CHILDREN\*

By DRS. REUBEN C. BATES AND  
STANLEY FREEDMAN

122 WATERMAN STREET, PROVIDENCE, R. I.

For the purpose of this paper we have considered a group of 108 patients seen in the Children's Asthma Clinic of the R. I. Hospital from 1930 to the present time. A large percentage have been under observation for 1 to 3½ years.

The youngest child seen in the clinic was three years of age, while the oldest was thirteen. There were 21 children under five years and 87 over five. The shortest time any child in the group suffered

from asthma was 6 months while the longest was 11 years. The average number of years suffering from the disease was 3½ years. This last figure illustrates the fact that asthma is a long drawn-out condition.

When a history of infantile eczema is found an allergic origin is suggested. In this group 32% gave such a history, which is somewhat higher than quoted by other authors who obtained their information after the patient has reached adult life.

The number of cases giving a definite family history of atopy, one or both sides, was 59%. Spain and Cooke<sup>1</sup> have shown that in families in which there is a bi-lateral history of hyper-sensitiveness, nearly three-fourths will eventually develop some form of atopy, and in those families in which there is an uni-lateral history, more than one-half will develop such symptoms. Manifestations of hyper-sensitiveness in the offspring do not necessarily take the same form as that in which they appear in the ancestors. It is still a moot question as to whether allergy is an hereditary disease or whether there exists in certain individuals a predisposition to the acquisition of protein hyper-sensitiveness. A study of the family history of allergic patients will reveal the fact that a much larger number of relatives are found to be affected with manifestations of allergy than is the rule in other families.

When a child comes to the clinic the first step is to determine, in a general manner, whether the problem is an allergic one. With the history of recurrent bronchitis or pneumonia, or if the child sneezes every morning or coughs a great deal at night, and these conditions are paroxysmal, there is a suggestion of respiratory allergy. If the sneezing or coryza occurs in the spring or August we have a suggestion of hay-fever.

#### *Specific History*

All the factors attendant on the onset of the disease should be inquired into carefully; for example, we should try to find out the places the patient visits, the first ingestion of certain foods, the bedding used, contact with animal or bird pets. The occurrence of attacks at night may indicate a relation to the bedroom; occurrence in the daytime shortly after a meal may indicate some relation to foods. It is also a great help to get an exact description of the most recent attack. Removal of feather pillows and coverings for mattresses sometimes results in complete cessation of the symptoms.

\*From the Rhode Island Hospital Pediatric Allergy Clinic. Read before the Providence Medical Association November 6th, 1933.

Environment

Proximity to stables, chicken farms and other dusty environments might also be the cause of allergic conditions. The home should be investigated for the detection and analysis of all dust-producing articles. Bed clothes, furniture, floor coverings, toys, clothing and pets have all been found to be causative agents in producing this condition. Our worker has visited many of the homes of our patients and made many suggestions regarding the prevention of attacks by creating a dust-free room.

We have followed in a general way the classification of Rackemann, i.e., Extrinsic Asthma, which includes those patients whose asthma depends upon some cause outside the body, and those in which the cause depends on something wrong inside the body we call "Intrinsic." We have tried to follow the etiological classification which depends upon an analysis of the patient as a whole: his history, physical examination, skin tests, and end result.

Classification

	Number cases
1. EXTRINSIC ASTHMA	66
Pollen asthma	
Animal asthma	
Mixed and unidentified	
Extrinsic Specials:	
Dust, Feathers, Orris	
Food, Eggs, Fish	
2. INTRINSIC ASTHMA	27
Bacterial asthma	
3. HAY FEVER	15
Total	108

The diagnosis of asthma is easy, but the determination of the specific cause is beset with many difficulties. One must devote a great amount of time, effort and ingenuity in the search of a causative agent, if there be one. One must be alert to the possibility of contact with an unexpected substance at home, at school or on the street. Even the very air which an asthmatic breathes should be under suspicion for it may carry dust particles which, though harmless to the non-allergic individual, may act like a trigger to let loose a severe attack in a person who is subject to asthma.

The diet must likewise be investigated. Often a patient is aware of the fact that a certain article of food is responsible for allergic symptoms. In such instances it is best to eliminate the foods under suspicion, even though scratch or patch tests are inconclusive. Food is generally not considered of great importance as an exciting factor in the production of asthma. Food sensitivity is usually linked with

eczema, gastro-intestinal disturbances, migraine, angio neurotic edema and the like. However, a person who has an allergic physical make-up will remain in his hyper-sensitive state as long as he is constantly exposed to an offending substance. For example, an asthmatic person who is sensitive to a focus of infection in the para nasal sinuses or to dust, if he is at the same time sensitive to egg yolk, the ingestion of egg yolk will arouse and aggravate his sensitivity to his focus of infection or to the inhaling dust and produce an attack. This point has been proven many times to our complete satisfaction.

We think of inhalants as being the excitors of asthmatic attacks. Our experience with 170 asthmatic children has shown that most of them show multiple sensitivity.

TABLE 1  
Number of Positive Skin Reactions in the Various Groups

Animal Emanations	47
Food	75
Pollen	59
Dust	39
Bacterials	24

Table 1 shows that our asthmatics gave 75 positive reactions to various articles of food, in addition to the positive reactions given to various inhalants, namely, animal emanations, pollens and dust.

Table 2 is presented to show the articles which are often giving positive reactions. However, if a complete diagnostic survey is to be made, one should make tests with all the available materials to which a human being may be exposed.\* By so doing pleasant surprises will often occur by discovering some innocent unexpected substance to which positive reactions will be obtained.

TABLE 2  
Items Which Produced the Greatest Number of Positive Reactions

- 1. Animal Emanations:
  - Cat Hair
  - Rabbit Hair
  - Chicken Feathers
- 2. Pollens:
  - June Grass
  - Orchard Grass
  - Ragweed
- 3. Food:
  - Egg Yolk
  - Egg White
  - Tomatoes
  - Salmon
  - Strawberries
- 4. Dust:
  - From Own Home

\*The technic of the tests is purposely omitted as it is taken for granted that everyone is familiar with it.



Allergists have been calling attention to the fact that the sedimentation speed of the red blood corpuscles is increased in asthma, and that the rate of this increase in speed is directly proportional to the severity of the asthma. We have done 58 sedimentation speed tests on as many asthmatics. These cases varied from very mild to very severe cases. We also noted the presence or absence of chronic foci of infection in these 58 asthmatic children. A child was considered as having a focus of infection if an X-ray examination revealed marked thickening of the lining of the para nasal sinuses, or thickening of the walls of the bronchial tree, or if the child had clinical evidence of repeated tonsillar infection. If we could show that a rapid sedimentation rate is always or nearly always associated with the presence of long standing infection, and if it could, furthermore, be shown that a rapid sedimentation rate is usually observed in the very severe cases of asthma, then the sedimentation test could be used as a means to prognosticate to a certain extent upon the future severity or upon the probable duration of the disease. It could also be used as a guide in the detection of the presence or absence of chronic hidden foci of infection.

In our group of fifty-eight children whose sedimentation rates we determined, we found that the time varied from thirty minutes to six hours. Two hours is considered normal for the average well person, for the technic employed in our tests. Allergic individuals are supposed to have a faster rate, namely, a rate less than two hours. Normal individuals have rates of two hours or longer. We found that as many children had evidence of chronic foci of infection in the slow sedimentation speed group as in the fast group. We also found that many of the very severe cases of asthma had very slow rates, rates even as slow as four and five hours. Likewise we found a few mild cases of asthma, and a few cases with no evidence of chronic foci of infection in the rapid rate group.

We have therefore concluded that the sedimentation time is not a reliable index to the degree of severity or to the presence or absence of chronic infection in asthmatics. Furthermore, the varied rates obtained indicate that allergy itself does not influence the sedimentation time.

Each child has had several cultures taken during his visits to the clinic. These were taken generally at a time when the patient was having an acute attack of asthma. Cultures of sputa from over one

hundred specimens showed an incidence of bacteria in the following predominance:

TABLE 3

<i>Organisms</i>	<i>Per Cent</i>
Pneumococci	41
Streptococci	30
M. Catarrhalis	15
Staphylococci	14

The blood studies showed a moderate amount of anemia probably due to the continued attacks many of the children were subject to. All but one child showed a consistent eosinophilia, while the blood chemistry did show a lowered blood calcium. The blood phosphorus level was practically normal.

Blood Counts	No. Examined	High	Low	Average
W.B.C.	154	22,500	2,375	9,300
R.B.C.	154	5,790,000	1,950,000	4,485,000
Hemoglobin	150	95%	64%	81%
Eosinophilia	146	24%	1.5%	6.9%

Criep and McElroy of Pittsburgh studied Blood Calcium in atopy and found that patients suffering from asthma have a blood calcium which closely approximates the normal. They concluded "that a deficiency of the blood calcium cannot be found to exist in atopic conditions, and calcium therapy does not seem to produce a permanent increase in the blood calcium of atopically sensitive patients." In 80 cases of asthma they report an average of 10.08 mg. per c.c. The blood chemistry findings from our clinic follow:

TABLE 4

*Blood Chemistry Determinations*  
(mg. per 100cc serum)

	No. Examined	High	Low	Average
Calcium	120	11.0	5.3	8.6
Phosphorus	117	7.9	2.5	4.5

Dr. Charles Bradley, in a personal communication, has recently given us an average of 124 Blood Calcium determinations in children of our age group, and who were non-asthmatics, of 10.8 mg. The blood phosphorus average was 4.5 mg. or the same as we had obtained.

It is important to realize that the manifestations of allergy may be noted for the first time following one of the common contagious diseases of childhood. Peshkin found that pertussis was the most frequent causative disease. Measles and scarlet fever may also be a cause. Pneumonia and influenza may also be responsible. In one group the common cold was followed by asthma in 19 patients. From

the parents of our children we found that most of the attacks of asthma began after the following diseases:

TABLE 5

1. Whooping Cough .....	16
2. Colds .....	19
3. Measles .....	8
4. Pneumonia .....	11
5. Bronchitis .....	9
6. After Removal of Tonsils .....	2
7. Undetermined .....	25

Many of our children were found to be sensitive clinically to certain foods as observed by the parents.

TABLE 6

*Number of Cases Sensitive (Clinically) to Foods*

Egg .....	14
Tomatoes .....	2
Milk .....	1
Spinach .....	1
Beans .....	1
Corn .....	1
Fish .....	1
Potato .....	1
Candy .....	1
Orange .....	1

Eliminating the offending foods will generally achieve good results in many instances.

Table 7 shows the incidence of tuberculin reactions found in non-asthmatic children varying from 9.3% to 20%, while in asthmatic children we obtained positive tests in 20%. It has been found that area testing among large groups of children will average around 28% of reactors.

TABLE 7

*Incidence of T. B. Reactions*

NON-ASTHMATIC CHILDREN

Chadwick .....	9.3%
Sill .....	9.2%
Slater .....	8.6%
C. H. Smith .....	16.9%
Pinckney .....	20.0%
Anderson .....	16.7%

ASTHMATIC CHILDREN

Reisman and Mason .....	38.6%
Allergy Clinic (R. I. Hospital) .....	20.0%

The intra-cutaneous tuberculin test (1-1,000) was performed on all children in the Allergy Clinic, the ages varying from 3 years to 13 years. Many workers believed that asthma in children was due to some form of pressure or obstruction from the enlarged tracheo-bronchial glands. Schick in 1910

presented 36 cases of asthma caused by Tuberculous Tracheo-Bronchial glands of which 13 were confirmed by autopsy. Other writers have reported cases of Tuberculosis of the hilum glands in children simulating asthma. Reisman and Mason believe that the asthma is due to a sensitization on the part of the individual to the bacterial products of tubercle bacilli probably tuberculin. They tested 30 cases of asthma with Tuberculin and stated the results in many cases was almost a specific. Ling in 1928 reported in the Lancet equally good results in treating asthmatic children with the tuberculin whether the skin reaction was positive or negative.

Lewison and Freilich reported on fifty-one cases of asthma which also had tuberculosis, and with tubercle bacilli in their sputum. Rackemann and Colmes found thirteen patients with active tuberculosis among their series of 1074 cases. Reisman and Mason showed that a positive tuberculin test occurred in 38% of 158 children with asthma, but in only 17% of non-asthmatic children.

About 400 X-rays have been analyzed by the roentgenologist from chest plates taken of our children. These were repeated once a year. The findings are quite typical and the chronic cases show more marked "fibrosis." There is generally thickening of the peribronchial structure, due to lymph glands at the lung root. At times these markings radiate out toward the periphery and may be quite extensive, although we agree with Rackemann in that "severe and long standing asthma can occur without fibrosis."

Routine X-rays were taken of the sinuses in all our patients and many were repeated during the past four years. In allergy, positive findings may be purely transitory, being present at one time and absent at another. Definite X-ray evidence of abnormal shadows in one or more sinuses was found in 67% of our cases. Chobot recently reported a series of 84 asthmatic children where he found evidence of sinus disease in 67%. Rackemann and Tobey, in a study of 1074 patients with asthma, found evidence of sinus disease in 44%. It is reasonable to believe that about one-half the patients who have asthma may be expected to have sinus disease associated with it. Bullen believes that the condition which tends to produce asthma in an individual may also tend to bring about pathologic changes in the sinuses and vice versa, and that in a large proportion of the patients, in which the two

(Continued on page 43)

# THE RHODE ISLAND MEDICAL JOURNAL

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FREDERICK N. BROWN, M.D., *Editor*  
309 Olney Street, Providence, R. I.

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## EDITORIALS

### LABORATORY GUIDES IN MEDICAL PRACTICE

Common sense must always be the watchword of the busy practitioner. A great deal has been said, and with good reason, about the tendency of the modern medical man to lean unduly upon the laboratory in the matter of diagnosis and to forget the use of eyes, ears and hands. Yet it must be admitted that without the aid of special tests in the fields especially of bacteriology, chemistry, clinical mi-

croscopy and X-ray, we would be back in the dark ages floundering helplessly and relying on clinical guesses, shrewd perhaps, but often wrong. The wise practitioner, too busy to waste time on frills that may make his work seem "scientific" to his patients, knows when laboratory tests are indispensable and conclusive, when they are merely helpful, and when they are superfluous, an added and unjustifiable waste of time and money. He has equipped himself to do somethings for himself and is seldom driven to the indefensible practice of sending urine samples to the public laboratories for analysis. He makes it a rule to use the leucocyte count routinely as an aid in studying infections.



The triple ideal of Osler "The library, the laboratory and the nursery; books, balances and bairns" is in his mind. But though he knows that a throat culture or sputum test may be decisive in the diagnosis of diphtheria or pulmonary tuberculosis, he does not ever try to shift the responsibility for solving his clinical problems to the shoulders of the man who, for example, does his blood chemistry and interprets his X-rays or electrocardiograms. In other words, the clinician, if he be worthy of the name, keeps his own hand on the tiller, accepting this or that aid in charting his course, but always realizing that, after all the laboratory reports are in and all the opinions of consultants, if any, have been recorded, it is he and he only who must make the final decision.

ASTHMA STUDY IN CHILDREN

(Continued from page 41)

conditions are found, it is improbable that the sinusitis, in itself, is the cause of the asthma or that the asthma is responsible for the sinus changes.

A questionnaire was sent to all parents of the children and in most cases the worker in the clinic asked the questions directly. It was interesting to see that 72 children of the 108 in the series were definitely aided by the clinic.

Clinical Results

1. Did the clinic help your child?	
Yes .....	72
No .....	21
2. Has your child's condition improved?	
Much .....	39
Moderate .....	19
Slight .....	21
No .....	14
3. Are the attacks less severe since the tonsils were removed?	
Yes .....	37
No .....	38

It is generally believed by many that removal of tonsils is seldom of any value although we believe many of our children have been benefited greatly by this procedure. Why this surgical operation benefits asthmatics we are unable to explain, unless it is due to non-specific shock which temporarily benefits the allergic state. A number of our children have been free from attacks for two years after a tonsillectomy.

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REPORT OF THE PROVIDENCE  
TUBERCULOSIS LEAGUE

By DR. JOHN I. PINCKNEY, *Executive Secretary*  
1933

"A wise man once said that the greatest stumbling block to progress is the fact that we know so much that isn't so. If we could approach new ideas with an open mind, free from misconceptions and false ideas of the past, our progress would be greatly accelerated."

Our present-day conception of the control of tuberculosis is so radically different in many ways from that of only a few years ago it is hard for us to readjust ourselves to a new order of procedure.

We all recognize that these are days of prevention, but we fail to recognize that the only sure way of preventing tuberculosis is by preventing infection. We have assumed that by the time adult life was reached we were all infected, without applying the tuberculin skin test and determining the fact. Thousands upon thousands of children and young adults in all parts of the country to whom the tuberculin skin test has been given have proven the fallacy of this statement.

In the early days of skin testing we saw so many children and young adults, apparently in good health, who reacted positively to the tuberculin skin test, that we concluded there was a sharp line of demarkation between the tuberculous infection and tuberculous disease. We said, "Yes, infection has occurred and it is probably a good thing, as it will confer upon the individual a certain amount of immunity which will protect him from reinfection in the years to come."

Even in the presence of calcified lesions in the lung field and in the hilus glands visualized by the X-ray, we concluded that the lesions had healed and

that probably no further trouble would arise. Had we followed over a period of years, as is now being done, these infected individuals, both with and without demonstrable lesions, we would have seen many of them fall ill with tuberculosis.

Our follow-up study over a period of nine years indicates that tuberculous infection, as well as the demonstrable childhood type of the disease, instead of protecting the individual from subsequent infections, is in reality definitely detrimental in that it alters the normal resistance to tuberculosis present in the uncontaminated human body in such a manner, that, should reinfection occur, the first infection, which is usually benign, gives place to the second or the adult pulmonary form, which in altogether too many cases proves fatal, due chiefly to the fact that we have waited, under the old order of procedure, for signs and symptoms to appear before making the diagnosis. This is why our institutions are filled to overflowing with moderately and far advanced cases, and alters, in no uncertain manner, the need of institutional care.

It seems impossible for us to conceive that it is possible to have a progressive lesion developing in the lung, that can be demonstrated and followed by means of the X-ray from month to month over a period, sometimes of years, without giving rise to any abnormal findings on physical examination, and the individual remains in apparently good health, absolutely free from symptoms, and yet this is exactly what is happening among a great many of our young people, and is why we will continue to need and demand more institutional beds for the care of the tuberculous.

Disregarding the fact that, had the diagnosis been made and proper treatment been instituted before the disease advanced to the stage where signs and symptoms appeared, many could have been restored to health without a prolonged sanatorium stay, with uncertain results and added cost.

In every phase of present-day life we are striving for new and more efficient methods to cope with old problems. This is particularly true in tuberculosis. With the coming of the sanatorium idea we thought that the problem was solved, but it soon became evident that the sanatorium could hope to reach but a small percentage of those in need of observation, supervision and care.

The most vital factor in the management of large numbers of cases through the clinic is the institution of an adequate program of home treatment. We already appreciate that, under existing condi-

tions, the sanatoria are not capable of handling the long list of patients seeking admission. The patient who must wait his turn for sanatorium treatment, in many instances, has lost the probability of cure, when the time for his admission arrives unless, while waiting, he is subjected to a careful regime of home treatment.

Few patients remain long enough in the sanatorium to arrest their disease and therefore treatment must be continued in the home after their discharge from the sanatoria. I believe that the time has come, with our mounting numbers of known cases, to make the principles of home treatment acceptable to all, and bring the message to the public that protracted sanatorium residence, expensive climatic changes and costly specialistic care are not absolutely essential in the cure of tuberculosis.

More money spent in the field or, in other words, in the home, will accomplish equally good results at a far less cost in properly selected cases, and enable the sanatorium to meet the demands for the newer therapeutic indications, surgical and otherwise, in properly selected cases.

Economies and the principle of the greatest good to the greatest number urge us on toward another objective, namely, the greatest possible good with the shortest possible sanatorium stay. At the present time every tuberculosis program, if it is to travel in the right direction, must consist of two units, a sanatorium unit and a field unit, each unit bearing a very definite relationship to the other, the efficiency of both depending very largely upon the degree of co-ordination and co-operation with each other.

Such a program calls for the development of an adequate field unit operated through the clinic through whose agency all tuberculosis members of the community and their contacts are placed under supervision, treated according to the modern conception of home treatment, classified according to the disease progress into various types, and in individual cases, sent to the institution for treatment.

The function of the sanatorium under such plans involves the welfare of the patient and, in addition, if proper reciprocal relations are to be maintained with the field unit, the welfare of the community. On the theory that we must prevent infection if we would prevent disease, each patient discharged from the sanatorium must be properly evaluated as to his or her potentiality as a possible health menace.

Theoretically, the sanatorium stay would be materially shortened. Suitable cases receiving collapse therapy would be returned to their homes at a much earlier date to continue treatment with their private physician or under the clinic. It is therefore imperative that considerable time be devoted to the education of the patient in the care of themselves and in the protection of others.

The closest co-operation between the sanatorium and the field unit along this or other similar lines is not a new idea. It has been in practice in many of our largest cities for some time with the most gratifying results, as shown by a greatly accelerated decrease in the mortality rate. That there is real need for action at this time is clearly shown by an analysis of 1351 diagnosed pulmonary cases in our active files on December 16th.

On that date, 110 were at the Sanatorium; 36 at the Charles V. Chapin Hospital; 5 at Hillsgrove, a total of 151 receiving treatment in institutions; the remaining 1200 were in their homes, 575 of whom were being followed by the District Nursing Association, leaving a balance of 625 in all stages of the disease without supervision, aside from occasional visits to the clinic.

Of the total of 1351 cases, 635 had had the advantages of sanatorium treatment at some time, while 716 had never been to an institution. Under these conditions, is it any wonder that we do not make greater progress?

I realize that this is no time to suggest the expenditure of more money for health and welfare work, no matter how badly it may be needed, as all the agencies of the Community Fund are operating under curtailed budgets; however, there is a way to put on a demonstration in one of seven districts where tuberculosis is the most prevalent, with little or no additional expense.

Let us assume that it is possible to bring together, in a temporary manner, for demonstration purposes, a representative of the Board of Health, the Department of Public Aid, the District Nursing Association, the Family Welfare Society and the Tuberculosis League, as an active unit, and, as consultant in special cases, the private physician living in or practicing in the district. The building inspector, Mother's Aid, the School Department, the Children's Friend Society, the Society for the Prevention of Cruelty to Children, the American Red Cross, the International Institute and such other agencies best equipped to handle special problems that may arise from time to time.

Representatives of all these agencies are now working in the districts. The majority of the cases to be handled are already known to many of them and such new cases as may come to their attention should occasion no great expense. In fact, I believe that money would be saved by avoiding duplication and through the pooling of our efforts. I shall not go into detail as to just how this unit would operate. Its many advantages are apparent, as it offers to the individual and the family an immediate consideration of their problem from all angles.

The bronchiectasis clinic, a new piece of work, made possible by a grant of \$500 from the Rhode Island Foundation, was inaugurated during the year. The use of lipiodol marks a step forward in the diagnosis and treatment of bronchiectasis, a chronic disease unrelated to tuberculosis but often times diagnosed as such. Its sufferers cough and expectorate large quantities of fetid, purulent material, which becomes so offensive at times that they are shunned by all.

By introducing lipiodol into the bronchus we are able to definitely localize the disease process and decide upon a proper course of treatment to fit each individual case. Periodic injections of the oil have proven of definite benefit in some of our cases as a form of treatment. The injections have been made by Dr. J. Murray Beardsley, assisted by Dr. U. E. Zambarano, and Dr. Linly Happ has volunteered his services as otolaryngologist to conduct the nose and throat examinations. Arrangements are now under way at the Charles V. Chapin Hospital to provide bronchoscopic examinations and treatment when indicated.

The collapse theory clinic offers pneumothorax and surgical treatment. The laboratory staff of the same institution is co-operating with us to the fullest extent. Since March, 35 patients have received 41 injections. Time and space will not permit me to tell you of the many gratifying results, both from the standpoint of diagnosis and treatment.

One by one the development of the pneumothorax clinic, the surgical clinic, the bronchiectasis clinic, and finally the bronchoscopic clinic, mark milestones on the road to the present-day conception of the necessary aids in the proper treatment of chest conditions.

These several clinics offer to the people of Providence a service which, in years gone by, had to be sought elsewhere. To Dr. Nat Gifford, Dr. J. Murray Beardsley, who have been active in the development of the surgical clinic, Dr. Zambarano, who has



directed the pneumothorax clinic, and to Dr. Harvey Wellman, Dr. Frank Merlino, Dr. J. Murray Beardsley and Dr. Julius Kelley, who have volunteered their services in this clinic, to Dr. Linly Happ, who is now developing the bronchoscopic clinic at the Rhode Island Hospital, to Dr. Dennett L. Richardson and the entire staff of the Charles V. Chapin Hospital, the people of Providence owe their grateful thanks for making this necessary work possible.

The special follow-up work reported on last year was continued for the first six months of this year, with the same gratifying results. Unfortunately, lack of funds make it impossible to continue this valuable work.

The work among the junior and senior high school students has been carried on as in former years. This year, out of 2838 children who received the tuberculin skin test, 625, or 23%, reacted positively; among 616 who were X-rayed, 6 pulmonary cases were found and 84 showed evidence of the childhood type of the disease.

In the pneumothorax clinic held at the Chapin Hospital, 74 patients received 1548 refills. In the pulmonary clinic at the Lying-In Hospital, 149 individuals received 360 examinations, and 101 were X-rayed.

The attendance at all the tuberculosis clinics, by old and new patients for the year totaled 19,077, compared with 17,036 during the year 1932, an increase of 2,041, or 12%.

During the year 1933, 4,366 new patients were admitted to the clinics and 3,723 re-admitted, a total of 8,089 persons, or 707 more than during 1932, an increase here, therefore, of 9.6%.

Among this group 1,449 were found to have tuberculosis, 1,272 were considered as suspects and kept for further observation, as were 1,802 clinically non-tuberculous contacts, and 3,566 no evidence, non-contacts; 884 were discharged as non-tuberculous.

The number of new cases of tuberculosis diagnosed during the year, namely 724, exceeds last year's total by 151. They were classified as follows: 527 were considered to be in the minimal stage; 98 were moderately advanced; 38 were far advanced; and 61 suffered from non-pulmonary forms of the disease.

Living in the homes of the newly-diagnosed cases were found to be 2,256 contacts. As many of these as we have been able to get into the clinic, have been examined.

All told, during the year, 2,714 contacts have been examined; 3,398 tuberculin skin tests have been given and 4,415 X-rays have been taken. On January 1, 1934, the total tuberculosis register, including both old and new cases and their contacts contained altogether, 17,286 individuals.

The number of deaths from all forms of tuberculosis in the city of Providence for the year 1933 was 126, including 16 non-residents. In addition there were 49 Providence residents who died of tuberculosis elsewhere, making our corrected death rate 61.6 per hundred thousand for the year 1933, as against 65.1 per hundred thousand in 1932, a decline of 3.5%.

As the years go by the value of the work at Lakeside under the able direction of Miss Mary Murray has become so well known that it is unnecessary for me to tell you that the institution has completed another successful year. Greater care in the selection of children most in need of this type of treatment has been a feature of this year's work, preference being given to those in whose homes an open case of tuberculosis existed, in this way breaking the contact, thus allowing the child to build up a resistance to the disease. The details of the work done at the institution will be presented in Miss Murray's report.

To the contributors to the Community Fund, who make this work possible, and to Miss Murray, Dr. William P. Buffum, Mrs. Hilda Burnill and the entire staff, we owe a debt of gratitude.

Our 1933 budget was again figured upon a 16,000 clinic visit basis, but it seems utterly impossible to keep within this number, and I assure you it is getting to be a real feat to come to the end of the year with no deficit, particularly this year, with 19,077 clinic visits. The details of receipts and expenditures are presented in the Treasurer's report. The books have been audited and are open to your inspection.

In accordance with our agreement with the State Tuberculosis Association we received \$792 from this organization as our share of the 1932 Christmas Seal Sale.

The Community Fund, as in years gone by, has been most sympathetic and understanding and, while this did not add to our budget, it has helped us in many ways over rough places.

It would be a great pleasure to me to thank, individually, the 219 physicians, the nurses of the Health Department, the School Department, the District Nursing Association, and those in indus-

trial plants and the 33 different agencies, including the Department of Public Aid, which has provided us, from time to time, with clerical workers, also numerous individuals who have assisted, in one way or another, in the building up of the work.

To the entire staff of the organization, who have worked so harmoniously together throughout the year and to the Executive Committee, I again express my grateful thanks for their co-operation and support.

---

## OBITUARY

DR. HENRY PLUMMER LOVEWELL

Henry Plummer Lovewell, M.D., was born October 27, 1866, the son of Baron P. and Louise Mowry Lovewell, and died January 1, 1934, at his home, 1266 Westminster St., Providence, R. I., after an illness of two weeks.

Dr. Lovewell, a graduate of Mowry and Goff's Preparatory School, received an A.B. degree from Brown University in 1889, and an M.D. degree from Harvard Medical School in 1893. He served an internship of two years at the McLean Hospital and finished a medical internship at the Boston City Hospital in 1896.

Dr. Lovewell was survived by his wife, Helen C. Worthley, only a few days; two daughters, Mrs. Sally Keith Barney and Mrs. Louise Baron Sheldon.

Dr. Lovewell was loved and admired by his patients and respected by his friends. He was a man of many interests, a great lover of nature, a botanist of no mean ability, and a student of bird lore.

It is with a sense of loss that we note the passing of Henry P. Lovewell, a doctor and gentleman of the old school.

CHARLES F. DEACON,  
GEO. S. MATHEWS.

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## SOCIETIES

THE RHODE ISLAND MEDICAL SOCIETY  
COUNCIL

February 9, 1934.

The regular quarterly meeting of the Council was held Feb. 9, 1934, at the Medical Library Building, and was called to order at 4:30 P. M. by the 2nd Vice President, Dr. Roland Hammond, and subsequently presided over by the President, Dr. Charles S. Christie.

The Council voted to approve the letter announcing the formation of a Nose and Throat Pay Clinic at 485 Broadway to be sent to the physicians of Rhode Island, the heads of the several hospitals in Rhode Island and to the Superintendents of City and Town Health Departments.

The Council voted to place upon the retired list of members:

Dr. Patrick H. Keefe,  
Dr. Horace N. Williams.

The Council further voted that the following members be dropped for non-payment of dues:

Dr. Earl R. Devere, Woonsocket, R. I.  
Dr. Edw. F. Dougherty, Jr., Providence.  
Dr. G. Stanley Gordon, Providence.  
Dr. Valentine Ujhely, State Hospital, Howard, R.I.  
Adjourned.

Respectfully submitted,  
J. W. LEECH, M.D., *Secretary*

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## HOUSE OF DELEGATES

February 9, 1934.

The regular quarterly meeting of the House of Delegates was held Feb. 9, 1934, at the Medical Library Building and was called to order at 5 P. M. by the President, Dr. Charles S. Christie.

A letter from the Woonsocket District Medical Society which was presented to the general session on Dec. 7, 1933, and referred from there to the House of Delegates for action was read by the secretary. This letter was a protest against the institution of a Mental Hygiene Clinic by non-medical organizations in the City of Woonsocket staffed by members of the State Hospital for Mental Diseases at Howard. On motion made by Dr. Charles L. Farrell and duly seconded, it was voted that a committee of three be appointed by the chair to investigate health clinics throughout the State, to receive complaints, and to report its findings and recommendations at the next meeting of the House of Delegates. The Chairman appointed the following committee:

Dr. Chas. L. Farrell, Chairman,  
Dr. Arthur P. Noyes,  
Dr. C. C. Dustin.

Dr. Charles F. Gornly, chairman of the Medical Emergency Relief Committee of the Rhode Island Medical Society made a verbal report of the activ-

ities of his committee. Several meetings of the committee have been held, and today preceding this meeting a conference had been held with the Governor and other members of the State Emergency Relief Commission. At this meeting it was urged upon the State Emergency Relief Commission the willingness of organized medical profession to cooperate with the Commission in the furnishing of medical relief to the indigent sick on the State Relief rolls, such medical services to be paid to the physicians from Federal Funds allocated to the State Unemployment Relief Commission.

The following basic policy and procedure based upon regulations No. 7 issued by the Federal Administrator of the Emergency Relief was presented to the State Emergency Relief Commission.

It was voted that the report of the committee be accepted and the committee continued.

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#### PLAN FOR THE MEDICAL CARE OF PERSONS ON THE EMERGENCY UNEMPLOYMENT RELIEF ROLLS

*The Medical Emergency Relief Committee of the R. I. Medical Society Submits the Following Plan for the Medical Care of Persons on the Emergency Unemployment Relief Rolls.*

The R. I. Medical Society recognizes and appreciates the necessity for the intervention of the Federal Government in giving medical relief to the distressed and sick on the Unemployment Relief Rolls. For this purpose the Federal Emergency Relief Administration makes available funds that can be used under certain specified conditions defined in Rules and Regulations No. 1. (These rules and regulations are set out in detail in the *Journal of the A.M.A.* of September 23, 1933.)

That these benefits may accrue both to the unemployed sick and to the family doctor who has in a great many cases given medical services without hope of remuneration, we offer this plan.

#### *Policy*

The basis of the policy is an agreement between the State Relief Administration and the organized medical profession to recognize the traditional family-physician relationship and an agreement by the physicians to furnish the same type of service to an indigent person as would be rendered to a private patient. That such service shall be a mini-

mum, consistent with good professional judgment and shall be charged for at an agreed rate.

#### *Procedure*

A uniform procedure for medical care in the home shall be established by each local relief administration as follows:

(1) All authorizations for medical care shall be issued in writing by the local relief officer prior to the giving such care except that telephone authorizations shall immediately be followed by such a written order.

(2) Acute Illness—Authorizations for the medical care of acute illness shall be limited to a definite period and a maximum number of visits. Medical care in excess of this can only be authorized following investigation by the local relief officer.

(3) Chronic Illness—Medical care for prolonged illness shall be authorized on an individual basis and visits shall be limited in frequency by agreement.

(4) Obstetric Care—Authorization for obstetric cases in the home shall include an agreed number of prenatal visits, delivery in the home and proper post-natal care.

(5) Fee Schedule—The fee schedule shall be determined by agreement between the local relief administration and the local organized profession. All fee schedules shall be established on a basis of an appreciable reduction from the prevailing minimum charges in the given locality.

#### *Authority*

All agreements between local relief administration and the local medical profession must have the approval of the State Emergency Relief Administration.

Local relief administration shall request the president of the local district medical society to appoint a committee to advise them in the formation and adoption of these agreements and to assist them in maintaining proper professional standards and in deciding questions of policy and practice.

Participation in this work shall be open to all physicians licensed to practice medicine in this state who shall be willing to accept the regulations and provisions of this program.

The local relief administration and the local medical advisory committee in forming an agreement shall give due attention to the details of "Rules and Regulations No. 7 of the Federal Relief Administration."



The Medical Emergency Relief Committee of the R. I. State Medical Society shall act in an advisory capacity with the State Unemployment Relief Administration.

Adjourned.

Respectfully submitted,  
J. W. LEECH, M.D., *Secretary*

PROVIDENCE MEDICAL ASSOCIATION

The regular monthly meeting of the Providence Medical Association was called to order by the president, Dr. Charles F. Gormly, Monday evening, February 5, 1934, at 9 o'clock. The records of the last meeting were read and approved. A letter was read from the secretary of the Rhode Island State Dental Society announcing that their president had appointed Dr. Raymond L. Webster to serve on the Milk Commission.

Dr. Charles F. Deacon read an obituary on Dr. Henry P. Lovewell, and it was voted to spread it on the records and send a copy to the family.

Dr. Herman A. Lawson reported a case of deficiency disease where a diet without fresh fruit or vegetables presented a picture very closely simulating pernicious anemia.

The subject of the evening was "The Treatment of Angina Pectoris and Congestive Heart Failure by Complete Ablation of the Thyroid." The medical aspects were discussed by Dr. Herman L. Blumgart, associate professor of Medicine, Harvard University Visiting Physician and Director of Research, Beth Israel Hospital. He mentioned the large group of workers they had investigating all aspects of this subject which had followed from studies of the rate of blood flow. This is slow in heart disease and varies with the metabolic rate being slow in myxoedema. Attempts to make a weak heart supply the necessary blood flow for the requirements of normal metabolism often result in failure. Put the body in a state of myxoedema with its low requirement and the weak heart may keep up to this light duty. The heart itself is unaffected. Total removal of thyroid tissue is necessary as hyperplasia results when a small remnant is left and improvement is only temporary. In general patients do well when the basal metabolic rate is kept about minus 30. Above this the heart proves inefficient. Below this the troublesome symptoms of myxoedema occur as edema, sluggish mentality,

etc. Patients whose basal metabolic rate is already low before operation will not be improved. An analysis of results was given. Some patients can return to a fairly active life and nearly all have been markedly improved.

The surgical aspects were discussed by Dr. David D. Berlin, Assistant Professor in Anatomy, Tufts Medical School; Surgeon to the Thyroid Clinic, Beth Israel Hospital. He described the technique of operation stressing the necessity to remove all tissue, preserve the parathyroids and avoid injury to the recurrent laryngeal nerves which frequently lie in the tracheo-oesophageal sulcus but may be in close relation to or even for a short distance in the gland tissue itself. Careful laryngoscopic check up is made before the operation, after removal of one side and after the operation.

The patients are, of course, bad risks and anesthesia must be carefully chosen, being gas oxygen or nerve block.

The mortality has been low particularly in the latter part of their series.

Both papers were illustrated by numerous slides. They were discussed by Drs. Baldrige, Ferguson, Wells, Chase, Blumgart and Berlin. The meeting adjourned at 10:55 P. M. Attendance 172.

Collation was served.

PETER PINEO CHASE, *Secretary*.

*Annual Report of Standing Committee*

The Standing Committee of the Providence Medical Association held twelve meetings during the year 1933. Thirty-one applications for membership were approved and two laid on the table.

PETER PINEO CHASE,  
*Secretary*.

*Annual Report of the Treasurer, 1933*

Cash on hand January 1, 1933 .....	\$1,699.51
Annual dues .....	1,870.00
Interest on daily balance Jan.-June .....	5.97
Checks not cashed December, 1933 .....	61.50
	<hr/>
	\$3,636.98
Federal tax on checks .....	1.14
	<hr/>
	\$3,635.84

*Statement of Participation Account*

Participation Account January 1, 1933 .....	\$2,093.32
Interest on same for 1933 .....	68.57
	<hr/>
	\$2,161.89

*Annual Report of Treasurer, 1933*

Donation Rhode Island Medical Society . . . . .	\$450.00
Collations . . . . .	587.70
MEDICAL JOURNALS . . . . .	248.30
Binding JOURNALS . . . . .	190.89
General Expenses . . . . .	187.82
Secretary to Treasurer . . . . .	150.00
	<hr/>
	\$1,814.71
Cash on Hand January, 1934 . . . . .	1,821.13
	<hr/>
	\$3,635.84

The annual meeting of the Providence Medical Association was called to order by the President, Dr. James W. Leech, Monday evening, January 1, 1934, at 9:15 P. M. The records of the last meeting were read and approved. The reports of the Secretary, Treasurer, Standing Committee and Milk Commission were read and accepted. The report of the Reading Room Committee was dispensed with as it would be published in the MEDICAL JOURNAL, as it would be published in the Medical Journal. The President appointed as Obituary Committee for Dr. T. Edward Duffee the following: Dr. Charles O. Cooke and Dr. Henry W. Hopkins.

The paper of the evening was by Dr. V. H. Kazanjian, "Critical Analysis of Problems in Relation to Injuries of the Face and Jaws." Lantern demonstration. He considered intelligent first aid very important. Smears of wounds show no micro-organisms at first, with a rapid increase as time elapses. Hence he advocates thorough mechanical treatment with soap and water, even using anesthesia if necessary, the removal of foreign bodies and blood clots, and cutting away of devitalized tissues. Drainage should be established for deep wounds. In some cases marks should be cut out with a trephine knife and sutured. Packs and hot dressings are sometimes necessary.

As the facial bones are the framework supporting the soft tissues, a slight displacement of these will often affect the shape. Mastication demands good occlusion of the jaws, nasal breathing may be affected by injuries to the nasal bones, and visual disturbances may result from orbital injuries. He then presented a large series of slides illustrating plastic operations.

The President's annual address spoke of the effect upon the profession of the economic depression and the allocation of public money under the Federal Emergency Relief Administration for pay-

ment for medical services. He felt this to be the entering wedge of State Medicine, and that the Socialization of Medicine must inevitably increase. We must recognize this and initiate plans ourselves which shall not sacrifice the high ideals of our profession. For this the leadership should come through our organization of county and state societies and the American Medical Association.

The officers and committees for the ensuing year were elected as follows:

*Nomination of Officers*

For President—Charles F. Gormly, M.D.

For Vice-President—William P. Buffum, M.D.

For Secretary—Peter Pineo Chase, M.D.

For Treasurer—Charles F. Deacon, M.D.

For Member of the Standing Committee for five years—James W. Leech, M.D.

For Trustee of the Rhode Island Medical Library for one year—Edward S. Brackett, M.D.

For Reading Room Committee—George S. Mathews, M.D.; Elihu Wing, M.D.; Guy W. Wells, M.D.

For Delegates to the House of Delegates of the Rhode Island Medical Society—F. W. Dimmitt, M.D.; R. DiLeone, M.D.; L. I. Kramer, M.D.; W. A. Horan, M.D.; P. C. Cook, M.D.; J. J. Hoey, M.D.; R. R. Baldrige, M.D.; C. C. Dustin, M.D.; E. A. Sharp, M.D.; J. G. Walsh, M.D.; C. H. Woodmansee, M.D.; R. H. Whitmarsh, M.D.; V. J. Oddo, M.D.; W. Hindle, M.D.; C. W. Skelton, M.D.; P. P. Chase, M.D.; L. C. Happ, M.D.; W. C. Gordon, M.D.; W. M. Muncy, M.D.; J. J. McCaffrey, M.D.; P. Conca, M.D.; C. B. Leech, M.D.; J. H. Bartley, M.D.

The new President, after a few remarks, nominated for committees:

Collation—Charles J. Ashworth, Joseph C. Johnston.

Publicity—Creighton W. Skelton, Frederick N. Brown, Harvey E. Wellman.

Public Relations—Francis V. Garside, Lucius C. Kingman, Maurice Adelman.

The President, after reporting shortly on the work of the Medical Relief Committee, announced changes in membership so that it shall be constituted as follows: W. B. Buffum, Chairman; James W. Leech, B. H. Buxton, W. S. Streker, Rocco Abbate.

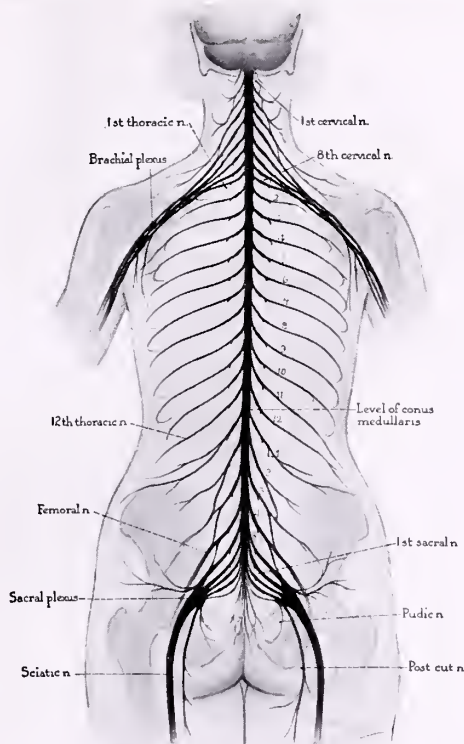
It was voted that the President appoint four new members of the Milk Commission, increasing

(Continued on page 52)

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the size of said Commission to eight, and that he ask the President of the Dental Society to appoint a dentist to meet with them. These appointments he announced, making the Milk Commission: Harold G. Calder, Chairman, 3 years; Henry E. Utter, 5 years; H. P. B. Jordan, 4 years; Francis V. Corrigan, 4 years; Robert H. Whitmarsh, 3 years; Reuben C. Bates, 2 years; George W. Waterman, 2 years; A. R. Newsam, 1 year.

The Standing Committee having approved his application, Francis H. Chafee was elected to membership.

The meeting adjourned at 10:50 P. M.

Attendance 115.

Collation was served.

Respectfully submitted,

PETER PINEO CHASE,  
*Secretary.*

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## BOOK REVIEWS

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FETAL, NEWBORN AND MATERNAL MORBIDITY AND MORTALITY. Report of the subcommittee on factors and causes of fetal, newborn and maternal morbidity and mortality. Hugo Rhrenfest, M.D., Chairman. D. Appleton-Century Company.

This book should be of absorbing interest not alone to the obstetrician and pediatrician, but especially to the general practitioner upon whom throughout the country at large falls the responsibility of caring for the great majority of maternity cases. The title page is somewhat forbidding and has about it the odor of statistics. This is unfortunate, for it is much more than a trite statistical study. It is an encouragingly successful attempt to go behind statistics and discover the ultimate causes and draw practical conclusions for the guidance of the clinical obstetrician, the specialist or the general practitioner.

The first 181 pages discuss the complications of pregnancy. The arrangement is such that the busy doctor can quickly find an authoritative summary of the best informed opinions on specific problems raised by conditions complicating pregnancy. He is not obliged to search through textbooks on internal

medicine or obstetrics, neither of which ordinarily treats in an adequate manner the ills from which the pregnant woman suffers in common with her non-pregnant sister.

The chapters on heart disease, nephritis, infectious and parasitic diseases, tuberculosis, syphilis, blood and endocrine diseases (goitre, diabetes, the anæmias, etc.) are concise but set forth with completeness the consensus on the best opinions on these often troublesome complications.

The chapters of forceps and Cæsarian section, while of interest to the specialist, should be read and pondered particularly by the men who are only occasionally called upon to consider performing these operations. The warning against the indiscriminate use of analgesia, anesthesia for the purpose of pain relief, is particularly timely. To one who believes that there is a crying need for a return to sanity in the practice of obstetrics, this report is most comforting.

Its conclusions and recommendations are not based upon the personal predilections of an advocate of this or that procedure, but on the critical study of a vast amount of statistical material by some forty collaborators eminently fitted for such a task. While based on statistical studies, the book is not cluttered up with tables. Statistical data are used only as a means of arriving at sound conclusions of clinical significance. It is to be hoped that it will be widely consulted and carefully read.

---

HOW TO BUDGET HEALTH GUILDS FOR DOCTORS AND PATIENTS, by Evans Clark. Harper & Brothers, New York.

This book sets forth the difficulties people have in paying doctors' bills and the problems the doctors meet in securing a fair income. It offers a plan, the "Medical Guild Proposal," which will help solve these problems. The Guild gives promise of professional independence, thus avoiding state or industrial medicine. It discusses state insurance and voluntary health insurance, and approaches to the Guild Plan. How Medical Guilds can be set up, including the business and professional problems, is shown here, and the attitude of the medical profession and the public is discussed. This book will be of interest to practicing physicians and hospital executives.

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PROVIDENCE, R. I., APRIL, 1934

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Contents continued on page IV advertising section.

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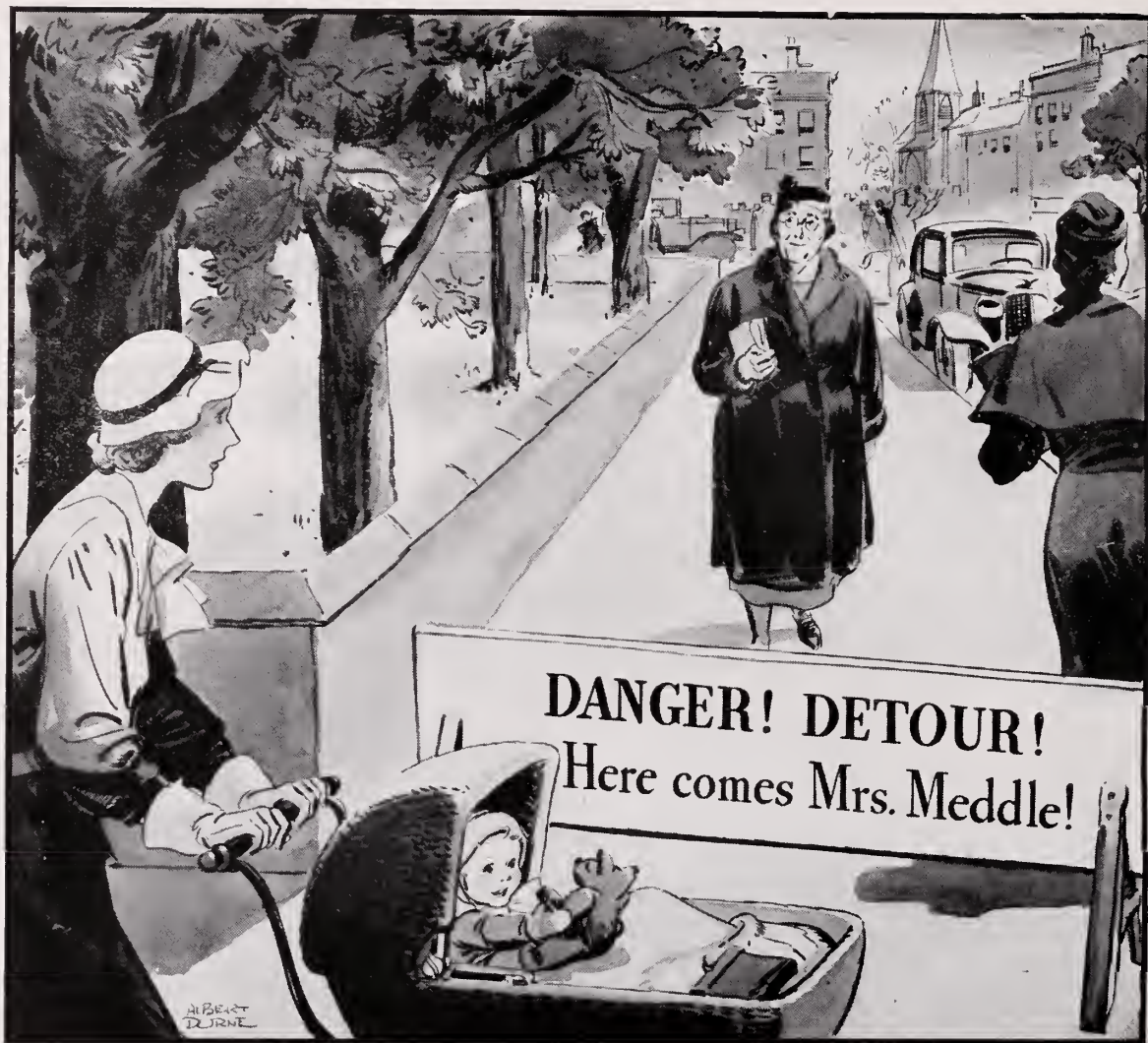
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livers for an adequate period, preferably with high-pressure steam, as the most certain method of producing medicinal oil of high quality. The essential points are to operate under such conditions and for sufficient length of time to ensure that all enzymes contained in liver tissue left in suspension in the oil are completely destroyed, and to continue steaming not only until the maximum yield of oil has been reached but for a little longer in order to produce an oil of maximum vitamin content from a given set of livers. Owing to the higher temperature of steam at higher pressures, it is obvious that the latter, in addition to effecting more rapid separation of the oil, will be more efficient in suppressing enzyme activity."

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\*J. C. Drummond and T. P. Hilditch: The Relative Values of Cod Liver Oils from Various Sources, His Majesty's Stationery Office, London, 1930.

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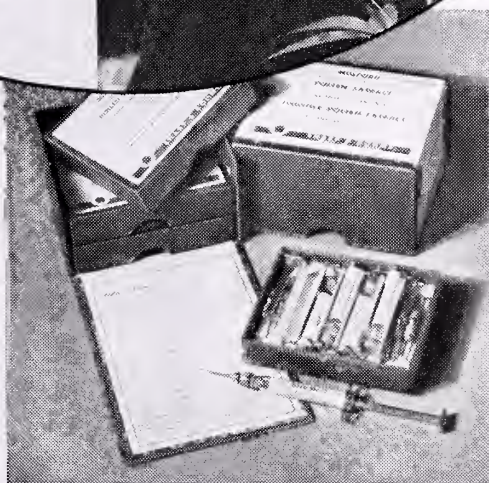
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# THE RHODE ISLAND MEDICAL JOURNAL

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## ORIGINAL ARTICLES

### DISEASES OF THE EYES A GENERAL PRACTITIONER SHOULD KNOW\*

By DR. VITO L. RAIA

276 BROADWAY, PROVIDENCE, R. I.

A disease of the eyes which begins with redness of the conjunctiva is often treated by general practitioners and considered as simple cold or conjunctivitis. But redness of the eyes is not always due to a conjunctivitis but may be the consequence of an inflammation of other tissues more deeply situated, such as the iris, the choroid, the ciliary body, etc. In iritis, if the pupil is not dilated at the very beginning of the disease, adhesions and partial occlusion of it takes place, a condition which is liable to give a great deal of trouble to the patient for the rest of his life. A physician may instil atropine solution in a more or less inflamed eye. The most disastrous consequences will follow if the patient is susceptible to that serious disease called glaucoma.

Early diagnosis of the patient's condition on the part of the physician is extremely vital specially to differentiation between conjunctivitis, iritis and acute glaucoma. When the latter ailment is recognized or suspected no time should be wasted in directing the patient so that he may have proper and immediate expert treatment.

Doctors on confinement cases are advised to instil nitrate of silver solution in the baby's eyes immediately after birth. But should a secretion of pus appear in the eyes after a few days the baby should be examined by an eye specialist. Children have become totally blind through the neglect or ignorance of the attending physician. I have seen some of such cases in my practice.

Ophthalmia neonatorum has given a high percentage of blindness in the past, and, although at present the Crede's method is used everywhere as prophylactic in private practice and in Lying-In Hospitals, a certain percentage, although not so

high, is still found. When a physician has a case of this sort he should inspect the eyes gently; he should not touch them nor attempt to separate the lids with force, for in doing so he may cause injury to the cornea and contribute to the ulceration and destruction of the visual organs. To open the lids of infants when the eyes are inflamed and especially when they discharge pus is a difficult and delicate matter, and it can only be skilfully and successfully done after years of practice. Even in the general hospitals it is very dangerous to leave the cleansing of the eyes and the instillation of medicines to nurses with no special training in nursing eye diseases. Much has been written and said by committees and associations for the prevention of blindness. Probably no small relief would come from the insistence that general hospitals maintain special and permanent trained eye nurses.

A few diagnostic points may be of interest to the general practitioner. The diagnosis of ophthalmia neonatorum is very easy to make; the principal symptoms are secretion of pus from the eyes and a marked swelling of the lids. How can we distinguish between conjunctivitis and iritis, between iritis and acute glaucoma? If there is redness of the eyes accompanied by secretion and agglutination of the margins of the lids in the morning it is positively either a cold or catarrhal conjunctivitis. If the eye only runs tears and the pupil is small, irregular about its margin and does not react to light, and if there is pain not only in the eye but also in the "cheek-bone" and the temple, and if there is a change of color of the iris there is indication of iritis. Atropine solution, as I have already said, must be ordered as soon as possible to dilate the pupil, otherwise this may become occluded and the eyesight more or less impaired for life. Glaucoma manifests itself principally by increased intraocular pressure in consequence of which the eye becomes hard. This increased pressure is due to diminished outflow of lymph from the eye, produced from occlusion of the canal of Schlemm at the sclero corneal region. Glaucoma is acute inflammatory, chronic inflammatory and non-inflammatory or simple. In inflammatory glaucoma the eye is red and painful as in acute iritis, the pupil not small and

\*Read before the Malpighi Medical Club of Providence at the monthly meeting, April 28, 1932.

irregular but widely dilated, and the anterior chamber is shallow. Should the patient reveal a large and oval pupil with very poor vision and no medicine has been dropped into the eyes no time should be lost. The doctor should act quickly, for an operation performed at the proper time in the majority of cases produces immediate recovery with a cessation of the pain and restoration of sight. There may be no redness of the eye, no pain whatsoever, and the patient may complain only of failing vision and of seeing colors and halos around the lights, especially in the evening. These symptoms are very likely prodromes of glaucoma, and anything that dilates the pupil, even cocaine, is liable to precipitate an acute attack of the disease. In simple glaucoma on the other hand, though the external appearance of the eye may be apparently normal, the intraocular pressure may be increased and the field of vision peculiarly altered. This latter affection is also considered by the majority of authors as the result of stoppage of the angle of filtration of the anterior chamber. To relieve it miotics are ordered for a long time and special operations are performed, very different from iridectomy, the only efficient operation for acute glaucoma.

Any physician may be called upon to remove a foreign body from the eye. If this foreign body is on the tarsal conjunctiva it is a very easy thing to alleviate the patient's suffering, but if it is embedded in the cornea its removal may be a very difficult task and should not be attempted by a general practitioner. Much injury to the eyesight has resulted from infection introduced through the corneal wound, no precautions having been taken to properly sterilize the instrument used and the wound afterward. In industrial establishments, where particles of emery, of iron, etc., are frequently being removed by fellow workmen, this practice should be discouraged, though at times it has been done with no injurious consequences. For on occasions ulceration of the cornea follows with pus in the anterior chamber which may impair vision and materially affect the earning power of the patient. These workmen should be urged, if they ever attempt to remove foreign bodies from the eyes, to sterilize at least with a flame, boiling water or pure alcohol the pointed object used by them. This should be clearly impressed by the medical profession and would doubtlessly result in a great preventive measure to reduce blindness in the community.

I referred to the danger of unskilful nurses in some general hospital in relation to ophthalmia neonatorum. A case of this affection was brought to my attention a few years ago. After a week of treatment when pus had greatly diminished the little patient was sent to a hospital. Three or four weeks later, when he was discharged from the institution, both corneae had become a mass of cicatricial tissues and blindness had set in permanently. The cornea of both eyes had evidently ulcerated and ruptured. I spoke to the visiting surgeon at the institution and he too was astonished at this terrible result.

To prove how important it is to keep trained nurses in hospitals where eye diseases are treated and specially ophthalmia neonatorum I repeat what Dr. Sanford R. Gifford says in his book of *Ocular Therapeutics*: "at one large hospital, during five years' incumbency of one efficient nurse as supervisor of the ward for ophthalmia neonatorum not a single cornea was lost except where keratitis was present on admission."

I also mentioned the injury to the visual organs from improper meddling with the eyes by some physicians. This is not so noticeable now as it was in the past, for fortunately among the present generation of physicians there is more cooperation. Following is a splendid illustration of this cooperation. A young physician had been called to see a patient, and completing his examination he was asked to visit another patient nearby suffering intense pain in her right eye. A simple glance convinced the young physician that it was something more serious than a cold of the eye. The relatives were urged to call an eye specialist immediately. The patient was removed to the Rhode Island Hospital and an operation was quickly performed. The pain subsided immediately, her sight returned and this has remained unaltered to the present date. Had the physician who first saw this patient been not so diligent and cognizant of the urgent necessity to refer this case to a specialist, the result would probably have been total blindness, specially that the other eye had already been lost from the same disease, glaucoma. Preventive measures to reduce blindness have engaged the attention of physicians, social and welfare workers for many years. Study of this problem reveals the shocking reality that the majority of cases of blindness could have been avoided under proper conditions. In consideration of this in industrial establishments there should be encouraged instructive talks to the workmen by



physicians on first aid measures in the care of their eyes when even the most trivial injuries are sustained.

In general hospitals eye cases should be examined promptly upon admission into the wards by competent experts, for as often happens, a disease not timely recognized may quickly precipitate serious consequences. On the other hand an eye from which a foreign body has been removed should be bandaged and kept so for at least 24 hours, because it is dangerous to leave the corneal wound exposed to dust and dirt, which are liable to produce an infection.

All of these measures and others will be well worth the money that may be spent to put them into effect. Finally I wish to call the attention of the general practitioners to strabismus or "cross-eye" which appears ordinarily in infancy. The affection, as a rule, is seen first by the family physician, from whose advice depends the loss or preservation of sight of one eye. Although much progress has been done in the etiology and treatment of squint, mothers are still advised by doctors to "let the child alone and to wait until he is older."

Considering that the deviating eye becomes more and more amblyopic as the years pass it is easy to understand the damage which procrastination produces to the visual organ. It is well to emphasize the necessity to begin treatment as soon as the defect is discovered, even at two or three years of age, by correcting all errors of refraction and by training the fusion faculty with orthoptic exercises. Most of the writers agree now that before the fifth year of life these exercises give very satisfactory and prompt results, while nothing can be obtained after ten or more years. To straighten the eye in these conditions with an operation does not mean that this will ever take part in binocular vision. Doctors should communicate this fact to mothers, nurses and teachers in order to urge them to send these cases as soon as discovered to the proper specialist.

I have mentioned, in relation to the prevention of blindness, iritis, glaucoma, purulent ophthalmia in infants, infection of the cornea due to improper way of removing foreign bodies and strabismus, because these affections are the only ones which, according to my experience, are occasionally seen by general practitioners and which should be recognized and properly treated at their very beginning to avoid the loss of vision. All the other diseases,

which contribute more or less to blindness in every community, are rarely seen by the general practitioners, as they are either neglected for some time by the patients themselves or are treated by competent specialists.

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## ORAL MANIFESTATIONS OF SYSTEMIC DISEASE\*

By ALEX. M. BURGESS, M.D.

454 ANGELL STREET, PROVIDENCE, R. I.

When in a stroll at night in a strange city, one chances to find himself looking in through the open window upon a lighted room of a dwelling house he is likely to speculate somewhat as to the inhabitants, constructing in his mind as he passes on in the darkness an elaborate picture of the family life which goes on within, and based wholly on the details that are visible in that one room. In much the same way but with vastly greater accuracy you who practice medicine and surgery in the dental field, gazing as you must long and earnestly in at the oral window, can discern much that is going on, indeed detecting at times the earliest evidences of general disease processes of the utmost importance. While, as dental specialists, you are in the habit of detecting infections and other abnormalities of the teeth which have the greatest interest to the medical man as related to disease elsewhere, you also have the opportunity at times, by the recognition of pathological conditions of other structures within view, such as the tongue, the gums or the lips, to point the way to the diagnosis of serious illness of the greatest possible concern to the patient and his physician. It is with this latter phase of your work that this discussion is concerned.

If, then, as we peer through the oral window we look about at the structures which merit our scrutiny, omitting of course the teeth, we have to consider first the mucous membranes generally, as to color, moisture, ulcerations, pigmentation and exudates, and next, the various special structures of interest, particularly the tongue, the gums, the lips and the collections of lymphoid tissues of the pharynx of which the most important are the faucial tonsils.

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\*Address to the New England Dental Society, Boston, October 18, 1933.

### *The Mucous Membranes*

The oral mucosa is normally pink because of the blood in the submucous capillaries. Thus a general pallor of these surfaces is ordinarily a sound indication of a decrease in hemoglobin in the blood stream, that is, an anaemia. An anaemia always demands medical investigation. In the same way cyanosis, a purplish coloration of the mucous membranes, usually best seen in the lips or occasionally the tongue, is due to an insufficient oxidation of blood hemoglobin, an anoxaemia, which, when persistent, is caused in the majority of instances by serious chronic disease of the heart or lungs. Again, dryness of the mucous membranes is the best indication of a depletion of body fluids, a dehydration which is seen in severe untreated diabetes as well as in uraemia, prolonged vomiting or fever, and also indeed in persons with nasal obstruction who are forced to breathe through their mouths. Brownish pigmentation of the oral mucosa, seen in adrenal insufficiency (Addison's Disease) may give the key to the diagnosis. Ulcerations, exudations and deposits on the gums, tongue and elsewhere, while often evidence of purely local processes, may also be merely local expressions of general infections, toxaeemias, poisoning by various chemical agents, dietary deficiencies or serious disease of the blood forming tissues, the timely recognition of which may be not only important but even at times life-saving.

### *The Tongue*

Of the specialized structures with which we must deal the tongue is the most interesting and important. From ancient times the first request of the doctor to the patient whom he is to examine has been "Stick out your tongue!" And what does the doctor see? A "coated" tongue perhaps, that is to say, a tongue the upper surface of which is covered with furry or slimy, whitish or grayish material. This appearance, which is usually associated in the minds of the laity with indigestion and constipation is seen in many fevers and in gastro-intestinal disorders, especially, as pointed out by Oatway and Middleton, in those associated with gastric hyper — rather than hypo-acidity. On the other hand a decrease in gastric acidity ordinarily goes with a tendency to smoothness of the tongue with atrophy of papillae. Other changes in the appearance of the tongue surface such as the fissured or "scrotal" tongue and the irregularity denuded or "geographical" tongue are of less sig-

nificance. A disturbance in motility or sensation usually indicates a well marked disorder of the nervous system either organic or functional; as for example, the protrusion to one side associated with hemiplegia, and the anaesthetic tongue seen at times in hysteria. Ulceration and inflammation of the tongue will be discussed along with similar conditions elsewhere in the mouth as associated with other oral manifestations of general disease.

### *Infections of Oral and Pharyngeal Mucosa*

While it is our main interest to consider those oral manifestations which may suggest systemic disease, it will be well first to consider briefly some of the processes in which the infecting organisms themselves produce lesions in the mouth or throat. Without attempting to describe them in detail we may mention as producing ulcers characterized by marked induration, which at times makes them difficult to distinguish from carcinoma, and not necessarily indicative of active disease elsewhere — syphilis, tuberculosis and actinomycosis.

It certainly is not appropriate for me to discuss with you the differential diagnosis of these disease processes, nor shall I attempt to describe such definitely local conditions as leucoplakia, tumors, benign or malignant, cysts or congenital abnormalities. In connection with syphilis, besides gummata of soft parts or bones, we must always remember that occasionally the primary lesion is encountered in the mouth, always, as you recall, a slowly developing ulcer on an indurated base with a secondary firm enlargement of at least one regional lymph node. Far more important, however, than either the primary or the tertiary luetic lesions, because of their frequency and their highly contagious nature, are the secondary manifestations, the so-called mucous patches with which you are familiar as filmy whitish areas occurring on any of the oral or pharyngeal membranes.

Among other infections of the mouth and throat that must be mentioned as connected with general disease are: — acute follicular tonsillitis, including the severer form known as "septic sore throat," scarlet fever, diphtheria and Vincent's angina. The throat of acute tonsillitis due to the hemolytic streptococcus and that of scarlet fever are usually identical, the etiological factor in both cases being a variety of the same organism. In scarlet fever, along with the exanthem, the papillae of the tongue become more prominent and desquamation of its



mucous membrane usually follows. The exudate, ordinarily located on or near the faucial tonsils, is distinguished from diphtheria by being as a rule less thick and dirty in appearance, less tenaciously adherent and surrounded by bright red mucous membrane instead of by a relatively narrow zone of dull redness. It is quite unsafe, however, to depend on this appearance in differentiating between the two and a culture carefully taken from under the edge of the exudate or membrane should always be obtained.

With Vincent's Angina as it affects the gums you are much more familiar than I, but with the lesion as it appears on the tonsils or pillars, possibly less so. When you see what is usually described as a "punched out" ulcer, covered by a dirty exudate on tonsil, pillar or thereabouts, especially when associated with a tender and painful lymph node below the angle of the jaw, you should think first of Vincent's Angina and attempt by direct smears from the crater of the ulcer to identify the spirochete and fusiform bacillus. It is well to remember, also, in this connection, that ulcerative lesions of the throat, often showing spirochetes and fusiform bacilli are seen as secondary manifestations in general disease. This is especially true in two important conditions in which changes in the blood picture are prominent. One of these is known as infectious mononucleosis or glandular fever. In most of these cases, sore throat is present and often there are ulcerations which may, as we have just stated, show the Vincent's organisms. Three characteristics distinguish this disease: first, the presence of enlarged and usually tender lymph nodes, almost always in the posterior cervical region and at times also in the axillae and groins. Second, the characteristic blood picture, in which there is a positive lymphocytosis with many "abnormal" forms of lymphocytes and third, the occurrence in the blood of agglutinins for sheep cells in high concentration, as has been shown by Paul and Bunnell at New Haven, and which is the basis of a diagnostic serum test for this disease which we have found, as they have, to be highly specific. In view of the fact that this benign and self limited condition may easily be mistaken both in its clinical appearance and its blood picture for the uniformly fatal lymphatic leukaemia, a definite diagnosis is of the greatest importance.

The other important disease with marked blood changes and usually ulcerative throat lesions is known variously as agranulocytosis, agranulocytic angina and malignant neutropenia. As the name

suggests there is usually a throat inflammation or angina which is ordinarily a spreading ulceration with considerable necrosis. Here again a blood examination shows, as the term agranulocytosis suggests, a marked reduction or practical absence of granular leucocytes and results, unless production of these cells takes place, in a speedily fatal issue.

### *Oral Manifestations of Diseases of the Skin*

Many diseases of the skin also affect the oral mucosa. Among these may be mentioned lichen planus, lupus erythematosus, erythema multiforme, angio-neurotic edema, and pemphigus. While usually characteristic lesions on the skin give the key to the nature of the condition within the mouth, at times these diseases may appear first intra-orally and in rare instances no other manifestations whatever may be present. Papules, occurring especially on the buccal mucosa with at times circular or conglomerate patches on the tongue or lips suggest lichen planus. In lupus erythematosus the lesion assumes varying forms which are described in the text books. On the tongue, where they are not very uncommon they may occur as grayish or reddish spots or patches, many of which ulcerate and resemble tuberculosis as it occurs in the same region. A very important skin disease with mouth manifestations is pemphigus. As you will remember, this condition is of unknown origin, is characterized by blebs and bullae on the skin surfaces, a profound systemic reaction and often a fatal outcome. It is well to recall that in the early stages the lesions may be confined to the mouth, in which case there are blebs and ulcers of the mucous membranes which usually become grossly infected and covered with membrane and tend to resist all treatment and to reappear persistently. The writer has recently seen in consultation two such cases in one of which the patient had been for a long time treated by his dentist for a supposed Vincent's infection. In both, the lesions were resistant to all forms of treatment that were tried and both ended fatally.

We may mention at this point a very common disease with important mouth manifestations — measles. Here we have an eruption appearing usually first in the mouth — the well known Koplik's spots, so easy to describe on paper but so hard to recognize unless one has seen them again and again. Small bluish white points, each on a red base, later becoming whitish, numerous and less characteristic, usually best seen on the buccal mucosa — this is perhaps as good a description as we



can give — but when seen in a person with an obvious coryza, a fever, a distinctly reddened soft palate and enlarged cervical lymph nodes, measles should be at once suspected.

#### *Drugs*

Just as diseases of the skin often have mouth manifestations, so rashes produced by drugs often also involve the mucous membranes of the mouth. The salicylates, acetyl salicylic acid (aspirin), acetanilid and antipyrin and their derivatives, the barbituric acid compounds, such as pheno-barbital (luminal), veronal, etc., phenolphthalein, quinine, arsphenamine and potassium iodid all fall within this category. With the iodid eruption salivation and an irritation of the throat and tonsils is often a troublesome feature. Of the drugs in which intra-oral changes are most important and characteristic we may name benzol, lead, bismuth and mercury.

Benzol poisoning produces a serious and often fatal aplastic anaemia. The intra-oral changes are those of severe anaemia to which we will allude later on. Lead poisoning produces the well recognized deposits in the gums known as the lead line. These are gray or black dots, arranged in a row usually about one millimeter from the free edges of the gums. As Cabot states, the term "blue line" is somewhat unfortunate. Both bismuth and mercury can produce severe stomatitis. Both are widely used in the treatment of syphilis and the former also in the treatment of sinuses and sometimes in radiographic work. The stomatitis of bismuth usually is characterized by a violet to black pigmentation and with both bismuth and mercury the process may go on to marked ulceration and secondary infection. In mercurial stomatitis salivation is an early symptom and indicates that tolerance for the drug has been exceeded. Later swollen and bleeding gums followed by actual ulceration will be found if the medication is not discontinued.

#### *Endocrine Disorders*

The only two disorders of the organs of internal secretions that ordinarily show definite intra-oral changes are hypothyroidism and Addison's Disease. In the former the tongue is thickened and seems to overfill the mouth (seen in its most marked form in congenital cretinism). Addison's Disease, caused by adrenal failure, usually due to tuberculosis of those organs, is evidenced by marked weakness, arterial hypotension and skin pigmentation—and in this disease the discovery of pigmented areas on the oral mucosa is a very important diagnostic finding.

#### *Deficiency Diseases*

In dealing with disease caused by lack of those dietary factors known as vitamins it is well to remember that it is probable both that partial vitamin lack may be present in many clinical conditions, especially those in which the absorptive powers of the digestive tract are impaired, and also that some diseases which manifest marked changes in the blood are due in part to vitamin deficiency. The best examples of this latter type are pernicious anemia and tropical sprue.

Of the conditions, however, that are classed primarily as deficiency diseases the most important for our consideration are scurvy and pellagra. Scurvy, or scorbutus, is due, as is well recognized by all, to the lack in the diet of vitamin C. This vitamin, which is the most delicate of all the vitamins, being easily destroyed by heat and by drying, occurs especially in fresh vegetables and fruit and to a less extent in fresh milk and meat. The disease is characterized by anaemia, loss of weight and hemorrhages from the mucous surfaces, under the skin and under the periosteum of the long bones. The most marked intra-oral manifestation is the change in the gums which become hypertrophied and soft and often bleed considerably. In the matter of differential diagnosis the condition is to be distinguished from the following diseases, in all of which a rather similar appearance of the gums is to be found—purpura, leukaemia and mercurial poisoning. The history of the insufficient diet is of course diagnostic and the other diseases are distinguishable by blood changes, especially the lack of blood platelets, in purpura, by the characteristic blood picture in the leukaemias and by the history of anti-syphilitic treatment in mercurial poisoning. It is well to remember that mild or slight cases of scurvy can occur and in our patients with swollen and bleeding gums to inquire carefully as to their dietary habits with reference to the intake of articles known to be rich in vitamin C.

In pellagra we are dealing, according to the opinions of most investigators, with the lack of another vitamin—designated as B<sub>3</sub> or G (the pellagra preventing substance of Goldberger). This vitamin occurs in fresh milk, meat, some fruits and vegetables and especially in wheat germ and yeast. The disease is characterized by weakness, anorexia, diarrhoea and dementia in its later stages. Its most typical and diagnostic lesion is a symmetrical dermatitis commonest on the hands and wrists but occurring anywhere on the body. In the mouth, a sore tongue is a frequent and often an early finding.

This glossitis resembles that noted in pernicious anaemia in that there is usually atrophy of the papillae, and it may show in addition numerous superficial ulcerations. The resemblance to pernicious anaemia is more readily understandable when we realize that in most cases of pellagra gastric achlorhydria is present and also that in the causation of pernicious anaemia, as shown by the brilliant work of Castle, one of the factors may be a lack of a substance in the diet which Castle has named the "extrinsic factor" and which is apparently identical with vitamin G.

### *Diseases of the Blood*

Pernicious anaemia, which from the foregoing must be considered in part a deficiency disease, shows, in the mouth, besides the evident pallor of mucous membranes, tongue changes resembling those just described. The smooth surface with atrophy of papillae is characteristic, and at times redness, swelling and even ulcerations may be present and merit the term glossitis. In the early recognition of this disease tongue changes are most important. The tongue of tropical sprue, a disease in which the blood picture may be identical with that in pernicious anaemia, may be quite similar but the tendency to ulceration and atrophy is described as being more marked. It should be kept in mind, however, that any profound anaemia, in which there is marked decrease or absence of hydrochloric acid from the gastric secretion, may show a tongue indistinguishable from the atrophic stage of the glossitis of pernicious anaemia.

Marked pallor of the oral mucosa, which of course suggests profound anaemia, but not necessarily associated with any definite tongue changes is seen in the anaemia of severe or repeated hemorrhages, infestation with *dibothriocephalus latus* (fish tape worm) and hookworm, the anaemia of malignant disease, benzol poisoning, and in two types of anaemia of unknown origin; namely, the so-called aplastic anaemia and that form of chronic anaemia seen especially in women which is usually called idiopathic microcytic anaemia. The last named is probably the same condition that is called chlorosis in young females and is readily amenable to large doses of iron. In this condition and also in gastric carcinoma, achlorhydria is frequently present with an accompanying atrophy of papillae of the tongue suggesting the picture in pernicious anaemia.

Of the other blood conditions which might be suspected on an examination of the mouth, polycythemia, the opposite of anaemia, may be men-

tioned in passing. In this rather rare disease, the number of red corpuscles and the percentage of hemoglobin is actually increased well above normal limits. The condition is ordinarily evidenced by a cyanosis like that of cardiac or pulmonary disease which is usually seen in the purplish appearance of the lips and tongue.

Purpura, which, as you know, is characterized by a tendency to subcutaneous and submucous hemorrhage, due to an interference with blood coagulation, shows bleeding and swollen gums, often as has been mentioned, resembling those of scurvy, and the differential diagnosis of the two conditions may be quite difficult.

Last, but by no means least, in our catalogue of morbid conditions meriting our consideration because of definite intra-oral changes we shall mention the leukaemias. These are apparently in their essence tumors, the one of the lymphoblast, the other of the myeloblast, in which the tumor cells differentiate sufficiently to multiply freely in the blood stream. Both are uniformly fatal. The diagnosis depends upon the recognition of the characteristic changes in the blood picture but in the lymphatic form it is not very uncommon to find cases in which for long periods the total leucocyte count is not increased, (the so-called a-leukaemic stage.) The disease is often difficult to recognize in this form. The intra-oral changes for which one must be on the lookout are general anaemia of the mucosa and bleeding from the gums. This hemorrhagic gingivitis may be, especially in acute myelogenous leukaemia, the first sign of trouble noted by the patient. For this reason it is not uncommon for a patient in the early stages of this disease to turn first for help to his dentist.

In conclusion let us re-emphasize the fact that many serious general diseases often show early and striking intra-oral signs which at times may be the only positive findings suggesting the diagnosis. Besides obvious local disease such as the lesions of tuberculosis, syphilis, scarlet fever and so forth, we must recognize the perhaps less striking secondary changes in gums, tongue and elsewhere which are of actually greater importance in that they are more likely to remain unrecognized at the dental examination. In particular, marked anaemia of the mucosa, ulcerative or atrophic glossitis, hemorrhagic and ulcerative gingivitis and stomatitis demand investigation. By the early recognition of the possible general implications of these local appearances the dental specialist can render a very great service to his patient.

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FREDERICK N. BROWN, M.D., *Editor*  
309 Olney Street, Providence, R. I.

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## RHODE ISLAND MEDICAL SOCIETY

Meets the first Thursday in September, December, March and June

CHARLES S. CHRISTIE	<i>President</i>	West Warwick
ALBERT H. MILLER	<i>1st Vice-President</i>	Providence
ROLAND HAMMOND	<i>2nd Vice-President</i>	Providence
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Meets the second Thursday in each month

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DR. L. J. SMITH	<i>Secretary</i>	Buttonwoods

#### NEWPORT

Meets the second Thursday in each month

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**R. I. Ophthalmological and Otological Society**—2d Thursday—October, December, February, April and Annual at call of President.  
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**The R. I. Medico-Legal Society**—Last Thursday—January, April, June and October, Archibald C. Matteson, President; Dr. Jacob S. Kelley, Secretary-Treasurer.

#### PAWTUCKET

Meets the third Thursday in each month excepting  
July and August

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#### PROVIDENCE

Meets the first Monday in each month excepting  
July, August and September

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#### WASHINGTON

Meets the second Wednesday in January, April,  
July and October

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#### WOONSOCKET

Meets the second Thursday in each month excepting  
July and August

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## EDITORIALS

### MUMMERY, MUSIC, AND MEDICINE

We are not privy to the details of Mr. Tugwell's proposed substitute for the so-called National Pure Food and Drugs Act, but we hope it contains adequate provision for controlling the advertising as well as the package labelling of drugs, cosmetics, and nostrums. We are thinking particularly of the present widespread use of the radio for disseminating the publicity blurbs of the patent medicine makers. One can hardly tune in on any program

for more than a few minutes without being invited, nay urged, to try So-and-So's skin cream (for acne, seborrhoea, pruritus, eczema, impetigo and psoriasis), or This-and-That mineral water concentrate (for obesity, high blood-pressure, headaches, dizziness, constipation, and most of the other ills of civilized man.) Such publicity is bad for two reasons: first, a part of it is definitely misleading; second, all of it may tempt persons suffering from serious maladies to dangerous experimentation in self-treatment. Now when we say that such advertising is misleading we do not mean that it is necessarily untruthful. Far from it. On paper it is undeniably veracious. But the adroit delivery of



some well-trained announcer can quite change its tone, and transform an innocent, half-apologetic little bid for recognition into a "message" bristling with unjustified promises and exorbitant claims. The listener, when the harangue is finished, is left with the impression of a definite promise of cure. He has no means of checking up on what the speaker has actually said, but he has a pretty good idea of its implications. And since the blurb is changed often, there is little danger of his getting a literal interpretation of it.

It is this insidious character of radio advertising that makes it the most dangerous tool of the nostrum-vendors. Doubtless it is not necessarily more deceptive in their hands than in those of any other commercial interests. But in matters pertaining to health, the public not only likes to be fooled, but likes to fool itself. Given the slightest encouragement, people will believe that symptomatic treatment with patent medicines of the "quick relief" type can cure the most serious conditions. And nobody knows this any better than the sponsors of Cough Syrup Hours on the radio.

The public, therefore, needs protection not only from the innuendos of unscrupulous advertisers, but from its own gullibility and self-deception as well. If it is not asking too much of the New Deal, we would like to suggest that future food and drug legislation should include such protection.

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### O TEMPORA! O MORES!

Recently a young Interne was heard to remark, in discussing a highly respected colleague, "He will never be successful because when he gets a patient that has no disease he frankly says so, instead of 'stringing him along' for a few months at five dollars for weekly office visits."

One cannot help but wonder that a graduate of a reputable Medical School should so far forget his training as to convict himself of dishonest ethics by such an attitude. Fortunately that does not represent the opinion of the profession in the matter of honesty and fair dealing, and Rhode Island holds no place for a Doctor with such ideas of integrity as a basic principle in the practice of an honorable and honored profession.

The young man might well reflect that "success" in our calling is far more to be measured in our

ability to save life and suffering and our public and professional reputation than in deflated media of exchange.

The cardinal virtues of sobriety, industry, self sacrifice, and honesty are still and will always remain the pillars of our professional integrity which we constantly guard.

The young man who starts out in life dishonest with his patients, is dishonest with himself and unfair to his sacred calling, and colleagues. Just as the newspapers continually scream in headlines "Crime does not pay," let us shout to our Internes, "Fidelity to your sacred trust is the sole basis upon which you may practice Medicine amongst us."

Thank God, Medicine is not yet a business, but still a profession.

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### THE MECHANICS OF PEPTIC ULCER PAIN \*

(AN EXPERIMENTAL AND CLINICAL STUDY)

By RUSSELL S. BRAY, M.D.†  
454 ANGELL STREET, PROVIDENCE, R. I.

Our interest in the problem of peptic ulcer pain was stimulated by the appearance in the literature of certain methods of therapy which have been advocated for the treatment of peptic ulcer. The primary object of ulcer therapy is to afford relief from pain, the ultimate object being the healing of the ulcerous process. This investigation is concerned only with the mechanics of ulcer pain; that is, the manner in which pain is produced and the reaction of the pain mechanism to those remedies which frequently afford relief.

In our experience, the many varied and seemingly unrelated therapeutic methods suggested for the treatment of peptic ulcer, have been about equally successful in affording relief from the painful paroxysms. The varying character of the remedies in common usage serves to emphasize the fact that the precise nature of ulcer pain is still in some dispute. It therefore occurred to us that this cardinal symptom of peptic ulcer would afford an

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\*From the clinic of Gastroenterology, Department of Medicine, Charles V. Chapin Hospital. Read at the June meeting of the Providence Medical Association, 1933.

†The author wishes to express his appreciation to Professor I. R. Taylor of the Department of Physiology, Brown University, for his kind suggestions and criticisms of this work; and to Mr. William Bell, Jr., of the Medical School, McGill University, who so skillfully performed many of the experimental studies.

interesting problem for clinical and experimental study. We hoped that certain information might be obtained from the study of the normal and abnormal stomach which would lead to a suitable interpretation of the pathophysiology of peptic ulcer pain.

It is a well known clinical fact that the nature and severity of ulcer pain may be extremely variable. Perhaps most frequently the pain of ulcer is described as a feeling of emptiness accompanied by intense hunger — this syndrom constituting the classical "hunger pain" of Moyinhan. Although the pain of ulcer may vary in character, it has one universal trait: that is, it always bears a direct relation to some phase of gastric digestion. It has been customary in evaluating the symptom of pain, to regard the time of onset of pain in relation to food, as being indicative of the type and location of the ulcerous lesion. The location of the lesion in the gastro-pyloro-duodenal tract has little significance in so far as the periodicity or time sequence of pain is concerned. The factor of periodicity is so readily altered by the type and quantity of food ingested and by other associated organic changes, that it cannot be regarded as having any great value in determining the character or location of the lesion. The mechanics of ulcer pain is the same, whether the ulcer is located at the cardia, along the gastric curvatures, or in the duodenal bulb. As Crohn<sup>1</sup> has pointed out, in interpreting the symptom of pain it is also essential to recall that individuals react in different degrees to the same pain stimulus.

It must be evident that the mechanics of ulcer pain is related to the problem of gastric sensibility. In health, the individual for the most part, is unaware of his stomach. He does not become conscious of his digestive process unless a distinct derangement of function exists. The only indication to the individual that his gastric functions are normal or abnormal is the state of his own sensations. Clinical experience compels us to believe that the stomach possesses a distinct sensibility of its own. According to Ryle<sup>2</sup> and certain investigators, the only sensations associated with the normal stomach are hunger, appetite, satisfaction, and repletion. Carlson<sup>3</sup> believes that the only physiological pains originating from the normal stomach are the pangs of hunger. Hurst<sup>4</sup> has shown the normal gastric mucosa to be insensitive to ordinary tactile, thermal, and chemical stimuli. An individual in good health is not conscious of the ordinary

fluctuations in gastric acidity. Therefore, we must assume that an individual becomes conscious of gastric pain only in the presence of deranged gastric function.

Although the symptom of pain is one of the most characteristic features of peptic ulcer, gastric pain however, is not in itself pathognomic of ulcer, as it is well known that pain similar to that of peptic ulcer may be produced by organic lesions distant from the stomach which by reflex action disturb gastric function. Although this fact is of great importance in the study of gastric pain we cannot discuss this aspect of the problem at this time. As it will be impossible to review the voluminous literature pertaining to the problem of ulcer pain, suffice it to say that to account for the painful paroxysms of ulcer, two hypotheses have been advanced:

- (1) That pain is caused by a hyper acid gastric secretion acting directly on the ulcer; and
- (2) That pain is caused by exaggerated peristaltic activity and states of increased gastric tone.

From the evidence presented by various investigators, it must be assumed that certain abnormalities of gastric secretion or motility are responsible for the production of ulcer pain. However, in order to evaluate the importance of these factors, we attempted to study the following phases of gastric physiology in the normal and abnormal stomach:

- (1) The character of the tonus contractions of the stomach muscle as peculiar to the fundus and antrum.
- (2) The effect on gastric motility of fluctuations in intra-gastric pressure as produced by the distended balloon.
- (3) The nature of the hunger contractions in health and their relation to the cause of ulcer pain.
- (4) The relation of the normal gastric secretion as stimulated by various test meals, to the function of gastric motility.
- (5) The effect of artificially produced hyperacidity on motility and gastric sensibility.
- (6) The manner by which alkali, food, and certain remedies in common usage, effect relief from ulcer pain.

Our work thus far has consisted of 230 observations made upon 38 individuals. The patients were selected from the gastro-intestinal clinic of the Charles V. Chapin Hospital and from private prac-

tise. This group was classified in the following manner:

- (1) 22 normal individuals (used for study of the normal stomach)
- (2) 16 individuals having a proven peptic ulcer (this group may be sub-divided as follows)
  - (a) 3 individuals with an ulcer of the lesser curvature
  - (b) 2 individuals with a gastro-jejunal ulcer (later confirmed at operation)
  - (c) 11 individuals with uncomplicated duodenal ulcer

We employed the balloon method which had been so successful in the hands of Cannon<sup>5</sup> and Carlson.<sup>3</sup> Modifications of this technique have since been described by various workers. We found the following method best suited to our purpose: a Rehfuß tube to which a thin rubber condom has been attached is introduced into the fasting stomach. A Levine tube is then introduced for the purpose of obtaining fractional aspirations of the gastric contents. The condom balloon is inflated with a measured quantity of air. The fluctuations in intragastric pressure produced by the contracting stomach muscle are registered upon a revolving drum. A mercury or water manometer may be enclosed in the circuit for the purpose of determining the changes in intragastric pressure. The complete apparatus is illustrated in the diagram (note—figure No. 1).

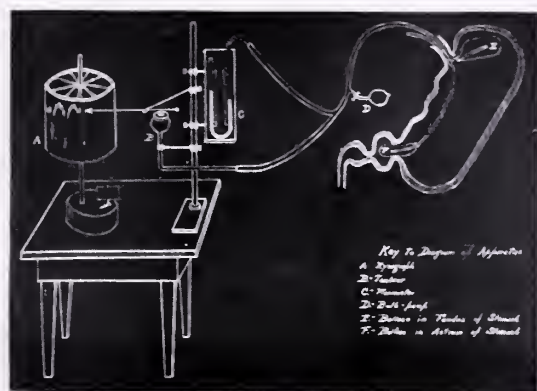


FIGURE 1. Arrangement and type of apparatus.

- A—Kymograph.  
B—Tambour.  
C—Manometer.  
D—Balloon in fundus of stomach.  
F—Balloon in antrum of stomach.

If a graph is to be considered as an accurate record of the motor activity of a specific region of the stomach, the position of the recording balloon

must be known and controlled by frequent fluoroscopic observations. This fact has not been sufficiently emphasized by certain investigators. The most difficult part of the experiment is the maintenance of the balloon at the desired level. We have, upon many occasions, observed a balloon originally placed in the antral segment displaced by vigorous peristaltic waves. It was thought that a balloon distended with water might remain in the desired position but we discarded this method because the tracings were not satisfactory. Even the weighted balloon may be displaced by vigorous peristaltic waves.

In a preceding paragraph we have tabulated certain aspects of gastric physiology which we believed to be directly concerned with the problem of ulcer pain. We feel that this program has served as an excellent approach to the problem, as the information obtained was of sufficient importance to at least justify an expression of an opinion as to the nature of the painful paroxysm. We deem it advisable to discuss the results of our observations in the following manner:

#### *Gastric Peristalsis*

Certain investigators have presented evidence which demonstrates the importance of gastric peristalsis in the causation of ulcer pain. However, as in the study of any pathological condition, a knowledge of the normal is essential to the intelligent interpretation of the abnormal. Alvarez<sup>6</sup> very aptly discusses the problem of normal gastric peristalsis as follows: "It is a remarkable fact that with all our advances in knowledge, we are still uncertain as to the exact way in which the waves of the stomach travel to the pylorus." It is apparent from this statement that there is still considerable doubt as to the manner in which a peristaltic wave traverses the stomach. The older writers taught that a peristaltic wave began as a shallow ripple near the cardia along the lesser curvature. This faint ripple reinforced by another shallow wave from the greater curvature, gradually deepens into an actual contraction as it progresses along the gastric contour. The peristaltic wave was thought to traverse the stomach until the upper level of the pars pylorica was reached. At this point the waves were assumed to contract so forcibly as to form a "transverse band" which served to almost divide the stomach into two distinct pouches. The upper pouch was thought to serve as a hopper for the



storage of food, while the distal pouch acted as a mechanical mixer or churner. The observations of Beaumont<sup>7</sup> and the experimental works of Hofmeister and Schutz<sup>8</sup> upon the excised stomach of the dog, were largely responsible for this earlier impression of gastric peristalsis. However, the observations of Cannon<sup>9</sup> and the additional roentgen-ray studies of Kastle, Rieder, and Rosenthal<sup>10</sup> largely discredit the existence of a distinct "transverse band," which separates the stomach into two independent functioning portions. It is the opinion of these observers that the peristaltic waves originating near the cardia travel all the way to the pyloric ring, the waves progressing uninterruptedly over the vestibule. Cole,<sup>11</sup> by using serial roentgenography, not only confirmed this belief, but offered the additional suggestion that peristalsis occurred in cycles. He classifies gastric peristalsis under five types, according to the number of waves present at any given moment.

In spite of the seemingly conflicting opinions, it is very probable that the contributions of the various observers afford a suitable explanation of gastric peristalsis. Barclay<sup>12</sup> aptly states his viewpoint of the subject as follows: "My own views on gastric peristalsis are that it varies so enormously, not only with the individual but from time to time in the same individual, that to attempt by a description or even a number of descriptions to represent the normal, would not be satisfactory—." Alvarez,<sup>6</sup> apparently is of the same opinion, for he considers the nature of gastric peristalsis a most confusing puzzle. There are many observers, notably Kelin,<sup>13</sup> Alvarez,<sup>6</sup> and Barclay,<sup>21</sup> who describe many varieties of peristaltic waves occurring in the same stomach. They have observed the distinct contractions of the antrum described by earlier investigators. Alvarez<sup>6</sup> offers the suggestion that this may be due to a difference in the rate of conduction of the wave in the two parts of the stomach. Time will not permit any discussion of the controversial subject of pyloric relaxation. Suffice it to say that a group of workers, notably (Cole, Hurst, Wheelon and Thomas, McClure, Reynolds and Schwartz) conclude that the sphincter, in the normal state, relaxes as each gastric peristaltic wave approaches the pylorus.

A phase of gastric peristalsis which demands consideration at this time, because of its suspected importance in the causation of ulcer pain, is that concerned with the production of hunger. Baldi-

reff,<sup>14</sup> Cannon and Washburn,<sup>5</sup> and Carlson,<sup>3</sup> have made an extensive study of the subject. Carlson has studied practically every phase of hunger in both health and disease. This observer has shown the feeling of hunger to be due to a series of peristaltic contractions of the stomach muscle. He describes the hunger contractions as actual peristaltic waves coursing from one end of the stomach to the other, beginning high up near the cardia and gradually involving the whole stomach.

Although our studies of the normal gastric peristalsis is still in progress, certain of our observations may be cited at this time. The balloon method as described in a previous paragraph was employed. Carlson<sup>3</sup> has shown that a uniform tonus rhythm is always present in the fundus of the empty normal stomach. We have, upon many occasions recorded the tonus rhythm of the fundus. In fact, in those individuals who failed to experience the sense of hunger the fundic tonus was the only evidence of gastric activity to be recorded. The tonus wave of the fundus as observed by us, is characterized by a series of uniform, shallow contractions of varying amplitude, and usually occur at 20-30 second intervals.

As there has been considerable dispute as to whether or not the antrum possessed a distinct center of tonus from which individual contractions could arise, we attempted to study the problem by introducing two balloons into the stomach, one localized to the fundus, the other in the antral segment. The balloons were attached to separate tambours and so arranged that the individual contractions would be registered upon a single revolving drum. Due to certain technical difficulties not easily controlled in the human being, the results of this experiment were somewhat variable. However, we have been able to obtain tracings which show that the majority of peristaltic waves arising

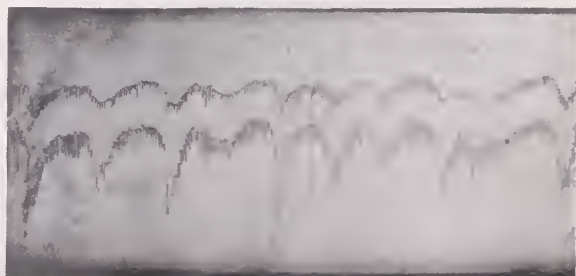


FIGURE 2. Double intubation. Upper line, balloon in fundus. Lower line, balloon in antrum.

from the region of the cardia course downward over the body and antrum of the stomach as continuous waves. Occasionally, less powerful contractions, apparently arising from the antral segment, were registered. It would be difficult to interpret these intermittent contractions which seem to bear no direct relation to the general peristaltic wave, in any other manner. These observations would seem to support in part at least, the opinion that at times peristaltic waves travelling from the cardia stop at the sulcus while a second wave arising from some portion of the antrum and travelling to the pyloric ring, completes the gastric cycle. Once the contractions involve the antral segment they usually become of greater amplitude and accompanied by increased tonus and intragastric pressure.

Cannon, Washburn, and Carlson have shown that the feeling of normal hunger is dependent upon contraction of stomach muscle. We have repeatedly observed and recorded the contractions of hunger. In order to obtain a record of the normal hunger contractions the intragastric balloon should be localized to the fundus. The graph obtained during the hunger phase shows certain characteristic features—the powerful contractions associated with the sense of actual hunger are always preceded by a series of shallow, ripple-like tonus contractions. At the beginning of the period the individual contractions occur several minutes apart, but as the feeling of hunger becomes more intense, the contractions are seen to occur in greater frequency and amplitude. The feeling of hunger occurs synchronously with the appearance of a series of powerful, rapid, peristaltic contractions. Each contraction lasts from 20 to 30 seconds and occur about a second apart. We have observed the hunger phase to end abruptly in tetany and by a gradual decrease in the frequency and amplitude of the contractions. The intra-gastric pressure produced by individual hunger contractions, in our series, varied from 8 to 10 m.m. of mercury.

The mechanical effect of the inflated balloon may be briefly stated: to obtain the most successful record of peristaltic activity the balloon should be inflated with as little air as possible. Twenty-five to fifty centimeters of air are usually sufficient. We have frequently produced an artificial hunger phase by increasing the air pressure of the balloon. The hunger period so produced, however, is of short duration and usually presents atypical features. Likewise we have produced the sense of gastric

pain by over-inflating the balloon localized to the antral segment.

Another phase of normal gastric physiology which is concerned with the problem of ulcer pain, is the manner in which food affects gastric motility and secretion. Certain investigators, notably McClure and Reynolds,<sup>15</sup> using a bariumized meal and fluoroscopy, conclude that a test meal introduced into the stomach is quickly subjected to the mechanical action of peristalsis. Our observations are not entirely in accord with this view. The effect of a test meal on gastric motility may be demonstrated by introducing into the stomach 200 to 400 centimeters of strained oatmeal gruel. With the balloon inflated to the proper pressure level, the following evolution of gastric peristalsis will be recorded—the fundus becomes quiescent immediately after the test meal is administered. In from 10 to 15 minutes a series of weak, shallow, tonus waves appear. These slowly and gradually give way to contractions of increasing frequency and vigor. As the stomach becomes nearly emptied, as determined by fractional aspirations of the gastric contents, contractions of greater frequency and amplitude appear. The subjective sense of hunger may occur at this time. We have also observed that the highest degree of free acid seemed to occur at the peak of gastric peristalsis; that is, during the stage of greatest peristaltic activity which apparently precedes actual evacuation. From our study of various test meals, such as water, milk, bouillon, crackers, olive oil, etc., we feel that the type and quantity of the meal ingested has a distinct effect upon the appearance time of peristaltic contractions and upon the rate of gastric evacuation.

#### *Gastric Peristalsis and Ulcer Pain*

The periodicity of the normal hunger contractions and their occasional association with the feeling of actual hunger pain, led certain investigators to study the relation of gastric peristalsis to ulcer pain. Ginsburg, Tumpowsky and Hamburger<sup>16</sup> studied a series of ten patients with peptic ulcer by the balloon method. They concluded that the powerful hunger contractions cause gastric pain in a hyperirritable condition of the stomach by increasing intragastric pressure. Other observers, notably Carlson,<sup>3</sup> Hardt,<sup>17</sup> Hertz,<sup>18</sup> Ryle,<sup>2</sup> Hurst<sup>4</sup>; as the result of intensive experimental and clinical study are convinced that pain in ulcer is dependent upon changes in muscle tension produced by hypertonus



and hyperirritability. On the other hand Palmer<sup>19</sup>, Ortmayer,<sup>20</sup> Reynolds and McClure,<sup>21</sup> believe that some mechanism other than gastric peristalsis must be present in order to satisfactorily explain the true mechanism of ulcer pain. It is quite evident from the foregoing remarks that there is a distinct disagreement among excellent authorities. However, we feel that certain conclusions are justifiable and our reasons for believing this to be so, may be summarized in the following paragraphs:

(1) The ease with which the painful paroxysms of peptic ulcer may be recorded by the balloon method seems to be dependent upon the pathologic state of the ulcer at the time of the experiment. It was most unusual to obtain evidence of pain during the period of apparent healing and quiescence. We occasionally produced pain by markedly over-inflating the balloon. The pain so produced resembled the true ulcer pain except for the shortness of the painful period. Apparently as soon as the stomach (antral segment) became readjusted to the increased intragastric pressure the pain stimulus was abated.

(2) It may be assumed that the ulcerous process is in a state of marked activity during the period of actual gastric pain. We were successful in obtaining satisfactory records of the pain mechanism in several individuals suffering from actual pain at the time of the experiment; that is, during the stage of ulcer activity. The balloon, inflated with a small volume of air was localized to the antral segment and its position verified during the experiment by frequent fluoroscopic observations. In every instance of subjective pain, unusual peristaltic contractions were recorded. We are not in accord with the view that the peristaltic contractions associated with ulcer pain are similar to those observed during the period of normal hunger. The sense of pain and normal hunger are unquestionably associated with increased gastric peristalsis, but are dissimilar in mechanical expression. A feature common to both gastric pain and normal hunger are powerful and frequent peristaltic waves; however, painful contractions occurred irregularly and the amplitude of the contraction varied as to the intensity of the pain. Painful peristalsis lack the rhythmicity and the phase of gradually increasing tonus which is so characteristic of the normal hunger period. The patients described their sensation of pain not as intense hunger, but as a feeling of emptiness, gnawing or boring, cramp-like pain.

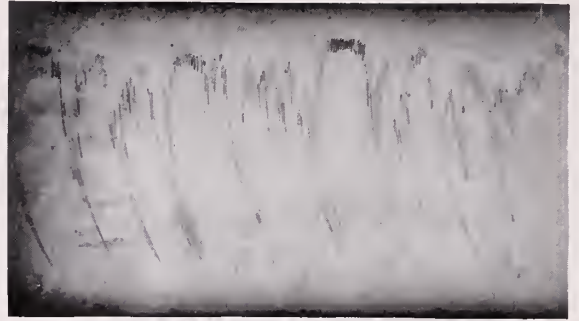


FIGURE 3. Typical contractions of ulcer pain.

The antrum was usually in a state of hypertonus during the feeling of pain, the graph revealing a stepladder pattern of painful impulses. During the pain free intervals, the peristalsis was of the normal type. In a few instances the pain was so intense as to necessitate the removal of the balloon. We noticed upon several occasions as the balloon was displaced from the antrum to the fundus, that even though the painful sensations continued the contractions were not similar to those obtained during the antral localization.

(3) The clinical value of any form of therapy advocated for the treatment of peptic ulcer is largely dependent upon its pain relieving qualities. As many of the remedies prescribed for this purpose are pharmaceutically dissimilar, it is difficult to understand how they accomplish this common objective. As the opportunity occurred, we attempted to study the effect of certain remedies upon the pain producing mechanism. The balloon method was employed and the remedies administered during the phase of ulcer pain. Although this study is still in progress we have obtained information concerning the effect of the following substances: gastric mucin, oatmeal gruel, milk and cream mixtures, olive oil, alkali, atropine and adrenalin. As time will not permit a discussion of the effect of the individual substances suffice it to say that the feature characteristic of the group was a marked inhibition of gastric peristalsis. During this period of peristaltic quiescence the patient was invariably free from pain. Fractional aspirations of the gastric contents were performed until gastric evacuation occurred. It was interesting to note that in spite of progressively mounting degrees of free hydrochloric acid the individuals remained free from pain until the meal had been evacuated. The neutralizing effect of the test meals employed



was slight and transient, the usual hyperchlorhydria occurring before complete evacuation of the meal. Olive oil produced the longest period of peristaltic quiescence and was the only substance producing an apparent neutralization of free acid. Atropine, administered subcutaneously, did not produce the rapid, striking effect characteristic of the substances administered orally. Adrenalin caused a spectacular, almost instantaneous, complete inhibition of peristalsis and relief from pain.

#### *Gastric Secretion and Ulcer Pain*

For many years it has been thought that the pain of ulcer was due to the presence of a chemical irritant; namely, free hydrochloric acid. Clinical experience has no doubt been largely responsible for this prevalent opinion, for it is common knowledge that ulcer pain can usually be effectively relieved by the administration of some form of alkali. However, when this aspect of the problem is subjected to experimental study the results leave the investigator in considerable doubt as to the actual importance of gastric acidity in the production of ulcer pain.

Of the numerous investigators who have studied this problem the work of Palmer<sup>19</sup> remains outstanding. This observer reports a very definite relation between gastric acidity and ulcer pain. He found that the introduction of 200 c.c. of 0.5 per cent hydrochloric acid into the stomach of a patient with an active, sensitive ulcer usually reproduced the characteristic ulcer pain. However, other investigators, namely, Hurst,<sup>4</sup> Ryle,<sup>2</sup> Hardt,<sup>17</sup> Herzt,<sup>18</sup> are of the opinion that gastric acidity is not an important factor in the causation of ulcer pain.

We have been unable to confirm the conclusions of Palmer. Using a group of normal individuals as controls, we introduced through a Rehfuß tube 200 c.c. of 0.5 per cent hydrochloric acid. The solution invariably produced a rather distressing sen-

sation of warmth and burning. A few individuals were unable to tolerate the irritating acid solution and quickly vomited it. In no instance was actual gastric pain produced. The experiment was then performed upon our patients with active peptic ulcer. The same distressing burning sensation occurred as in the control group, but in no instance was the ulcer pain reproduced. The acid solution was then introduced during the painful paroxysms, with the intragastric balloon in situ. The acid solution caused a moderate inhibition of peristaltic activity, the pain of ulcer being replaced by the sense of epigastric burning. The burning sensation remained until the solution was removed by aspiration or neutralized by alkali. Hardt<sup>18</sup> has found that the pain of ulcer could often be relieved by the administration of acid.

It was interesting to learn that the sense of epigastric burning or clinical "heartburn" associated with hyperacidity was in no way related to a state of gastric hyperperistalsis or increased tone. As this symptom invariably occurred in the absence of hyperperistalsis, it may be assumed that certain degrees of acidity may in some manner irritate the sensory nerve fibers of a hypersensitive gastric

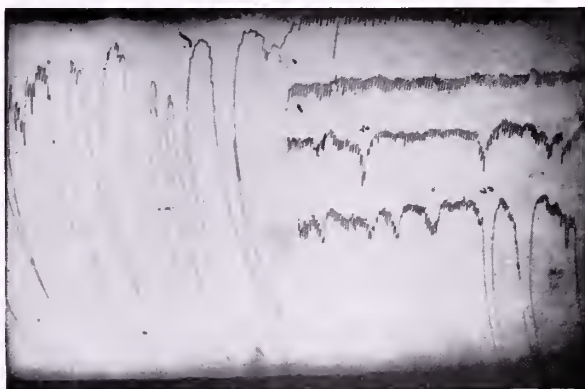


FIGURE 5. Demonstrating effect of Sod. Bicarbonate during ulcer pain. Note prolonged inhibition of peristalsis with gradual re-appearance of painful contractions.

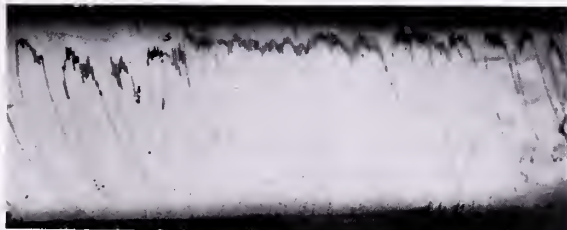


FIGURE 4. Demonstrating effect of 0.5 per cent Hydrochloric Acid during ulcer pain. Note inhibition of pain contractions.

mucosa. It is our impression that the beneficial effect of alkali upon the pain of ulcer may well be due to some factor other than neutralization. This problem is deserving of further study.

Certain clinical facts make it difficult to accept without qualification the acid theory of ulcer pain. Although hyperchlorhydria is the usual finding during a test meal study of an ulcer case, it is extremely rare to have a patient complain of ulcer pain even though the free acid mounts to excessive

degrees. It is not an unusual experience to find an even higher acidity during the period of ulcer quiescence than occurred during the stage of activation. Practically all alkalis afford but temporary neutralization and this period is frequently followed by a secondary rise in acidity without recurrence of pain. During experimental procedures ulcer pain may occur even though the acid gastric contents are being removed by fractional aspiration. Pain is quite characteristic of gastro-jejunal ulcer and yet one usually finds upon aspiration a gastric juice of low acid titre admixed with alkaline duodenal and pancreatic secretions. When an ulcerous lesion is accompanied by a hypersecretion of high acid titre, the complete removal of the gastric contents will often result in instant relief from pain. The pain mechanism in these cases is not quite clear though the pain may well be due to spastic states produced by acid. It has been our custom to avoid the use of alkali in the treatment of peptic ulcer. Only an occasional patient has required alkali therapy, while the vast majority have become symptom free when an effort has been made to relax spasm and inhibit exaggerated peristalsis.

An observation recently reported by Dragstedt<sup>22</sup> lends support to the acid theory of ulcer pain. This observer describes a case of "peptic" ulcer of Meckle's diverticulum associated with ulcer-like pain. It is assumed that the gastric mucosa lining the diverticulum secreted sufficient free acid to cause ulcer pain. It is to be regretted that more complete studies of the pain mechanism were not made. Aschner and Grossman<sup>23</sup> advance the theory that the pain of ulcer may be due to the gastritis and duodenitis which they have found to accompany the ulcerous lesion. Meyer et al<sup>24</sup> believe that ulcer pain is due to gastritis and depletion of the vascular bed in and about the ulcerous area resulting in asphyxia, edema and pain.

#### *Comments*

Although our observations tend to support the mechanistic theory of ulcer pain, we are convinced that this difficult subject cannot be concluded with any degree of dogmatism. Pain of peptic ulcer seems to be dependent upon the following inter-related factors: An active, sensitive ulcerous lesion occurring in an individual sensitive to painful stimuli, a stomach in which a profound disturbance of the peristaltic rhythm exists, and possibly, a high degree of free hydrochloric acid. The exact

nature of the stimulus which initiates the painful paroxysms is still in doubt. We are convinced that the sense of actual pain arises from states of increased antral tension, hypertonus and hyperperistalsis.

The gastritis and duodenitis associated with the ulcerous lesion, and excess hydrochloric acid have been suggested as possible irritating factors which may initiate the pain mechanism. We have shown that the greatest peristaltic activity occurs just prior to gastric evacuation and the peak of free hydrochloric acid also occurs at this stage. This probably explains the postprandial occurrence of ulcer pain. Hyperchlorhydria must be regarded as an essential part of the "ulcer diathesis," but its exact role in the production of ulcer pain has not as yet been satisfactorily evaluated.

#### *Conclusions*

(1) An attempt was made to study those phases of normal gastric physiology which were thought to bear some relation to the mechanism of ulcer pain.

(2) As the result of experimental and clinical studies we feel that the majority of evidence is in support of the theory that alterations in gastric tone and peristalsis, are of prime importance in the etiology of ulcer pain.

(3) Hyperacidity must be regarded as a characteristic feature of the "ulcer diathesis." It may be assumed that under certain conditions hyperacidity may play an important role in the production of ulcer pain.

(4) The possibility of inflammatory and vascular changes about the ulcerous area as factors initiating muscular hyper-irritability can not be disregarded.

(5) The rationale of frequent bland meals in the treatment of active ulcer is apparent. Gastric peristalsis is most pronounced when the stomach is nearly empty or empty. The introduction of bland liquids or semi-solid foods tends to inhibit gastric peristalsis.

(6) The treatment of peptic ulcer, whether medical or surgical, should follow certain physiological principles. An effort should be made to correct disturbed gastric physiology; namely, spasticity, tension, increased gastric tone and hyperperistalsis.

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**SOCIETIES**
**PROVIDENCE MEDICAL ASSOCIATION**

The regular monthly meeting of the Providence Medical Association was held at the Medical Library, 106 Francis Street, Monday evening, March 5, 1934, at 8:50 o'clock. The records of the last meeting were read and approved. The Standing Committee having approved their applications, the following were elected to membership: Alan E. O'Donnell, Victor P. da C. Rego and Orland F. Smith.

Dr. Buffum reported for the Medical Relief Commission that a plan for medical relief had been accepted by the State Unemployment Relief Administration and that it had gone into operation today.

Dr. James W. Leech presented the following resolution which was so voted: That the President be empowered to appoint an unemployment relief committee for Cranston, consisting of five members, three of whom have their offices in Cranston, with a Cranston man for chairman. Also that the President be empowered to appoint a similar committee for East Providence consisting of five members, three of whom have their offices in East Providence, with an East Providence man for chairman. That these committees shall consider the advisability of adopting in their localities a plan for medical care of the unemployed under rules and regulations No. 7 of the Federal Unemployment Relief Administration and that these committees shall have the power to formulate such plans and to represent the Providence Medical Association in making agreements with the local relief administrators.

The President announced the deaths of Drs. W. F. Flanagan, Jeffrey J. Walsh and Joel Webb.

Dr. Charles O. Cooke reported a case of chronic empyema that had a four-stage thoracoplasty.

The first paper of the evening was by Dr. U. E. Zambarano on "Some Medical Aspects in the Treatment of Tuberculosis." The best treatment is early treatment. The exclusion of tuberculosis in diagnosis is not a simple matter. A history of hemoptysis, pleurisy, family tuberculosis, malaise, etc., is important. The physical examination may show nothing significant and the sputum will probably be negative. The X-ray findings are important. Early treatment is within the scope of the general practitioner. Sanatoria are important as the majority of patients need institutional care, bed rest being the keystone of treatment. Collapse therapy is often indicated and here there should be close cooperation between the medical man and the surgeon. The dietary should be well balanced. Climate is not important. He stressed the value of prophylaxis.

Dr. J. Murray Beardsley spoke on Pneumothorax and Phrenicectomy in the treatment of Pulmonary Tuberculosis. He felt that Pneumothorax had revolutionized treatment. The selection of cases is very important and requires the co-



operation of tuberculosis specialist, internist, roentgenologist and surgeon. Collapse therapy should be started early with unilateral pneumothorax the first choice. Phrenicectomy may follow this and among the indications are adhesions of lung to the diaphragm, basilar lesion and pulmonary hemorrhages.

In general collapse may be considered from two viewpoints, temporary or permanent and phrenicectomy is of the latter type. Dr. R. Glenn Urquhart of the Norwich State Tuberculosis Sanatorium spoke on Surgical Collapse Treatment of Pulmonary Tuberculosis. The disease should be essentially unilateral and other collapse methods should generally have been tried first with failure. The proper selection of cases is the all-important point. The chief contra-indications are disease of the acute exudative type or rapidly progressive disease, dyspnea, renal tuberculosis or untreated laryngitis. The operation has changed particularly in the last two years and may be complete or partial. A frequent and serious mistake has been to remove too many ribs at a time. Complete cases are usually done in three stages now with very long sections of rib well back to the vertebrae. Post operative compression by dressings is important. A very fine series of movies demonstrated the operations.

The papers were discussed by Drs. Gifford, C. O. Cooke, Campbell of Norwich, Kingman, Winsberg, Pinckney, Perkins and Wing.

The meeting adjourned at 11:00 P. M.

Attendance 135.

Collation was served.

Respectfully submitted,

PETER PINEO CHASE, *Secretary*

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## NEWS ITEM

The JOURNAL notes with pleasure the election of Dr. Frank T. Fulton, a former president of the Rhode Island Medical Society, as president of the New England Heart Association. Early in his career, Dr. Fulton took a keen interest in the study of the heart in health and disease, being one of the pioneers in the use of advanced methods such as the ink polygraph and the electrocardiograph. This interest has continued unabated to the present, and this election is evidence of the position which Dr. Fulton has come to hold in this special field.

## BOOK REVIEW

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### CHRONIC INFECTIONAL EDEMA

During the past seven years, Franklin A. Stevens, New York (*Journal A. M. A.*), observed thirty-eight patients with recurrent infections resembling erysipelas. Half of these were infections of the extremities and half recurrent infections of the face. In the five patients in whom extensive and permanent edema of the extremities was associated with recurrent erysipelas or lymphangitis, the vascular and lymphatic circulation had been impaired by operations or disease prior to the onset of the infection. Four of the five patients with facial edema had infected antrums or ethmoidal sinuses. The importance of these infections is emphasized by the absence of similar infections among the fourteen patients in whom edema had not developed. Because of the similarity between the streptococcic and staphylococcic infections with edema, the author has employed toxic filtrates of staphylococcus in his patients with staphylococcic infections. Several series of inoculations have been given each patient. Beginning with dilutions of 1:200, subcutaneous injections have been given twice each week, increasing the dose gradually until 1 or 2 c.c. of undiluted filtrate could be tolerated. During the immunization a critical dose was reached, usually between 0.1 and 0.2 c.c. of undiluted filtrate, which caused redness, increased edema and swelling of the face. These reactions have been specific, occurring only with staphylococcus filtrates in staphylococcic infections, and with streptococcus filtrates in infections with streptococcus. If the amount of filtrate injected was reduced the reactions ceased, and subsequently, by gradually increasing the dose, 1 or 2 c.c. of undiluted filtrate eventually could be administered. Recurrences of infection occurred between series of inoculations. But with each series the edema and inflammation have receded until, at the present time, recurrences of infection have ceased and the faces are normal except for residual fibrosis. These patients have been tested intracutaneously also, with nucleoproteins of streptococcus and staphylococcus, with toxic filtrates and filtrates devoid of toxins; and filtrates devoid of toxin have been injected subcutaneously to evoke focal reactions.

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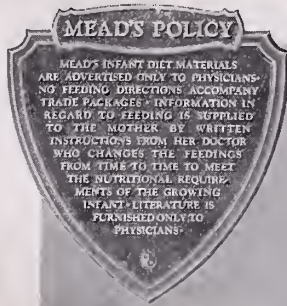
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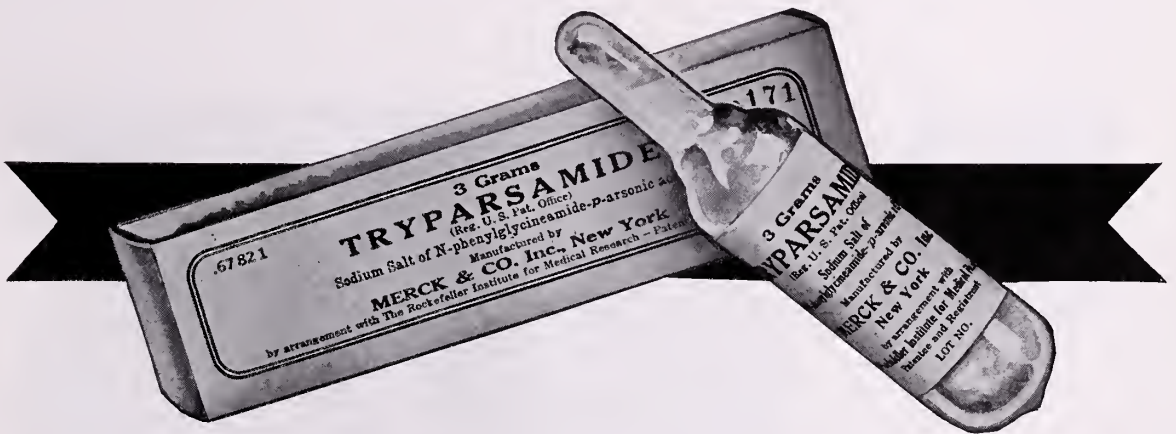
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## ORIGINAL ARTICLES

### THE TREATMENT OF NEUROSYPHILIS\*

#### A SUMMARY AND EVALUATION OF METHODS USED DURING THE PAST TEN YEARS

By WILLIAM NEWTON HUGHES, A.M., M.D.  
112 WATERMAN STREET, PROVIDENCE, R. I.

In discussing the treatment of neurosyphilis I shall make no attempt to cover all its phases or to claim any originality for ideas or treatment. I shall give no references and shall appreciate it if this paper is considered simply as representing what has passed the censorship of my conscious and unconscious fund of experience and knowledge. Many physicians of Rhode Island have contributed to this fund in a more vital way than any person whose article I might cite from the literature.

It is difficult to describe the treatment which I use, because it is different in almost every case. My office records show that practically no two patients have been treated alike. Treatment is modified to fit the patient and frequently some new knowledge or experience has modified my underlying ideas and altered the treatment. The most important thing to me is to be very sure not to make the patient sicker than he is, nor to make him lose his job or his self respect through my diagnosis and treatment. If I can find out early, what he fears will be the effect of syphilis or its treatment upon himself, his family, or his future family, I can often change his false ideas and save him much worry and myself much difficulty in dealing with him.

A complete diagnostic survey is very important before any actual treatment is given. This will include a careful physical examination which checks other systems of the body as well as the nervous system. Examinations of teeth, eyes, heart, liver, and kidneys are perhaps most important. Blood Wassermann examination and spinal fluid studies are invaluable at the beginning, and they are re-

peated occasionally during the treatment to show how the patient is progressing serologically. The physical and neurological examination also should be checked at times during treatment.

As I look back over the past ten years, there is no doubt in my mind that the treatment of neurosyphilis has improved almost as much as the treatment of diabetes and certainly more than the treatment of common colds. In 1922-1924 our armamentarium in treating neurosyphilis consisted of neoarsphenamine, mercury, iodine, and the injection intraspinally or into the ventricles or the cisterna magna of blood serum or spinal fluid modified by these drugs—the so-called Swift-Ellis technique or some modification of it. About the same time spinal drainage was done occasionally after intravenous neoarsphenamine injection. The Swift-Ellis technique or some modification of it is still of value in certain resistant cases of neurosyphilis and gives fairly rapid results, but I have not found it necessary to use it for several years. At the present time the majority of doctors treating neurosyphilis use this type of treatment rarely, if at all. In 1924-1926 sulpharsphenamine seemed the drug of choice and bismuth replaced mercury. Soon neoarsphenamine replaced sulpharsphenamine because of the possibility of dangerous and fatal skin reactions from the latter drug. No serious skin difficulties were encountered in my use of sulpharsphenamine (due, I think, to the use of only clear filtered solutions) and this drug was dropped as a routine measure because of fear of obtaining results similar to those which were being reported in the literature.

Since sulpharsphenamine can be given intramuscularly without much discomfort, it is still the drug of choice in treating children, and those adults whose veins are such as to render intravenous treatment impractical. The technique of giving it intramuscularly improved greatly within about a year after I started to use it. If it is mixed in a few tenths of a cubic centimeter of water, it will give much less discomfort than if it is mixed in a larger quantity of water as was first advised in the literature enclosed with the drug. At the present

\*Read before the Providence Medical Association, Providence, R. I., December 4, 1933.

time, even though the literature enclosed with the drug advises the use of only a few tenths of a cubic centimeter of water, many physicians still give the drug in the same old way despite the added discomfort to the patient. There is no doubt that there is much less discomfort with the use of a smaller amount of water and it would not take many injections to prove it to any doctor or any patient. It pays occasionally to read the literature which comes with the drug which is being used.

Bismuth replaced mercury because of its greater efficacy and because it is much less painful. At first I used each week potassium bismuth tartrate intramuscularly in one-tenth gram doses up to three to five doses, and then two-tenths gram doses up to a total of 1.5 to 2.5 grams. The first few injections were usually the most painful. The potassium bismuth tartrate was not used unless it was well dissolved and warm at the time of injection. Gradually I changed to another insoluble preparation, mesurol Winthrop, one cubic centimeter each week, as it is less painful and easier to use. It comes in ampules which are more liable to cut the doctor's fingers when they are opened than the potassium bismuth tartrate ampules, but it also comes in fifteen gram jars, which I find very satisfactory. Bismocymol is another insoluble bismuth preparation which can be used in place of mesurol. I have used in a few cases the soluble bismuth preparations, thiobismol, P. D. & Co., and bismuth sodium tartrate Searle. The thiobismol powder has to be dissolved in one cubic centimeter of water and its disagreeable skunk-like odor makes it rather undesirable for office use. The bismuth sodium tartrate is given in two cubic centimeter doses. The soluble bismuth preparations are supposed to be given two or three times a week, but except in a few cases at the beginning of treatment, I have given them once a week and then only as mild treatment for patients whom I did not wish to overtreat. They are much less painful than the insoluble preparations, but they will give a prompt and severe reaction if the patient is intolerant to bismuth. They can not be used as a milder form of treatment, if the patient is beginning to show signs of intolerance to insoluble bismuth preparations. I have used to a very slight extent combinations of iodine and bismuth such as rubyl, tartro-quiniobine Spicer and iodobismitol Squibb. They are given in two cubic centimeter doses. The first two give about as much discomfort to the patient as mesurol and are used

in very much the same way. I rarely use them because they are oily, red preparations which are difficult to remove from a syringe or from other things with which they may come in contact in the office. Iodobismitol is also red, but it is not oily. It is supposed to be given two or three times a week, but I have used it in exactly the same way as I have used the soluble bismuth preparations.

Mercury is still of value in cases intolerant to bismuth, but it is of most value in cases intolerant both to bismuth and the arsphenamines. If the patient is intolerant to bismuth, an arsphenamine may be tolerated and mercury is probably not necessary, though I tend to use it occasionally in such cases. If neither bismuth nor the arsphenamines are tolerated, mercury is the only drug available in addition to iodine to protect against syphilitic visceral and dermal involvement.

Iodine by mouth has been used intermittently in most cases of neurosyphilis during the past ten years and I still use it. Many neurosyphilitic patients can take very little of it without developing acne, rhinitis, or nausea, but most of them can take it for a few days each month. I have used essentially no intravenous sodium iodide solution as iodine seems to me just as effective by mouth.

The arsphenamines are of value chiefly in protecting against syphilitic visceral and dermal involvement, but bismuth is almost as good. Bismuth seems to me a safer drug for neurosyphilis and I tend to use more bismuth than arsphenamines. I always feel in using arsphenamines in neurosyphilis that I have a stick of dynamite hanging over my head. I use some arsphenamines in almost all cases, but I use much more bismuth. I prefer small doses and short courses of arsphenamines. I have had much more trouble with the arsphenamines than with bismuth or tryparsamide.

In about 1925 tryparsamide was added to the neurosyphilitic armamentarium. I used it at first in psychotic patients cautiously and with great fear and trembling because it was pentavalent arsenic with a penchant for the optic nerves. Routinely before each injection fundus examinations and rough peripheral fields were done and questions were asked in regard to subjective visual symptoms. Gradually timidity disappeared and I used tryparsamide in other types of neurosyphilitic patients. In a short time rough peripheral fields and fundus examinations were done only before the first injection, but questions in regard to subjective



visual symptoms, such as dimness or blurring of vision, flashes of light or jumping of sparks before the eyes, were asked before each injection, usually jokingly in a negative way to avoid the production of symptoms through suggestion. Neoarsphenamine was still the drug of choice in the majority of cases, but tryparsamide was considered the drug of choice in all cases with mental symptoms of any sort. Short courses of bismuth were given along with the tryparsamides or during intervals between courses of neoarsphenamine and tryparsamide.

In about 1929 bismarsen was added and it was used in certain cases in preference to arsphenamines, tryparsamide, and bismuth. It is a powder which has to be dissolved in a special vehicle which comes with it and it is given intramuscularly in two-tenths gram doses every four or five days. It is perhaps slightly more efficacious than sulpharsphenamine or bismuth alone, but it seems to be more painful than mesurol and slightly less painful than sulpharsphenamine. Possibly from all intramuscular types of treatment there is a certain amount of non-specific therapy in addition to the effect of the drug used. Tissue protein destroyed by the particular drug injected may produce such an effect, though, of course, the value of it can not be measured. I consider bismarsen of most value in Wassermann-fast cases and in tabetic and other neurosyphilitic patients whom it is not advisable to treat too strenuously.

Around 1929 malaria therapy or other types of fever therapy became generally accepted as the best type of treatment for mental cases which needed hospitalization. When compared with tryparsamide, it cost less, took less time to produce its effects, and gave about the same percentage of favorable results. For cases in which it was contraindicated, or for cases which did not require hospitalization, arsphenamines, bismuth, and tryparsamide still remained. Some neoarsphenamine, some bismuth, some tryparsamide, and some iodine were given to the majority of neurosyphilitic patients.

About 1930 electrical devices to produce fever were used in treating neurosyphilitic patients with mental symptoms in various research hospitals. The favorable results obtained were on the whole comparable to those obtained with malaria therapy. Such electrical methods of producing fever, as are now available, are expensive and require specially trained medical and nursing personnel. Severe burns, marked symptoms of meningeal irritation,

and even deaths have resulted from errors in technique. However, though these devices do not require hospitalization as malaria therapy does, I consider them at the present time chiefly experimental and not nearly as valuable as malaria therapy and tryparsamide.

During the early part of 1932, tryparsamide became the drug of choice in all cases of neurosyphilis, and malaria the best type of treatment for hospitalized cases who showed no contraindications to it. The percentage of improvement is essentially the same with either type of treatment. Malaria therapy, though less expensive and time consuming, is somewhat more dangerous than tryparsamide. There are no deaths with tryparsamide treatment, essentially no contraindications, and practically only one complication, interference with vision in about three percent of the cases. With malaria therapy, there is a small mortality, many contraindications to treatment, and frequently serious complications. Usually tryparsamide treatment follows the malaria. Malaria therapy appears to check the neurosyphilitic process more rapidly than tryparsamide and for this reason it is often used in cases which show no mental abnormality. However, since it requires hospitalization with absence from work and carries with it the possibilities of fatality and complications, I advise it chiefly for cases which are abnormal mentally and prefer tryparsamide for almost all neurosyphilitic cases who are normal mentally unless they are intolerant to it or do poorly with it. Cases, advancing despite tryparsamide, receive malaria therapy and cases who do not do well with malaria receive tryparsamide.

Tryparsamide is perhaps the only drug required in neurosyphilis for those cases which tolerate it. Alone without other types of treatment it gives as large a percentage of recovery and as complete a recovery as can be obtained by any known methods. It seems to be the only drug necessary in neural involvement. However, while the patient's nervous system is getting well through the use of tryparsamide, visceral and skin syphilis may develop and progress. Tryparsamide has little, if any, effect on visceral and skin syphilis and it will not stop in any way the progress of therapeutic malaria. Neoarsphenamine will stop therapeutic malaria in much the same way as quinine, only much more rapidly. The arsphenamines and bismuth and mercury have a very definite effect on visceral and skin syphilis. Because of these facts and because the

doctor treats the patient and not just the neural involvement, courses of bismuth or neoarsphenamine or mercury are given occasionally to protect the viscera and skin against syphilitic involvement. Usually bismuth and neoarsphenamine are given at some time or other to most neurosyphilitic patients in addition to tryparsamide. If bismuth is not tolerated, neoarsphenamine or mercury or both are used. I tend to use both. If the arsphenamines are not tolerated, bismuth, mercury, or both are used. I often omit the mercury. I have encountered no cases intolerant to mercury, probably because I have used so little mercury. When I do use mercury, I usually give mercury salicylate grains one intramuscularly every week for fifteen or sixteen injections. I do not feel as badly as I used to, if I cannot use the arsphenamines, but I do not like to find bismuth intolerance since bismuth is cheap, easy to give, and practically without danger. If bismuth and the arsphenamines are not tolerated (and this is more often than you might suspect in neurosyphilitic cases) mercury, as previously stated, is the only drug available in addition to iodine to protect against syphilitic visceral and dermal involvement. If the patient will not accept mercury intramuscularly because of pain, I do not worry very much as long as I still can use tryparsamide. I then occasionally give mercury and iodine by mouth in pill form or in solution, and at times use mercury by inunction in the form of mercurretes P. D. & Co.

I shall summarize briefly some of the improvements in neurosyphilitic therapy which have been generally adopted during the last ten years—sulpharsphenamine, bismuth, tryparsamide, bismarsen, and malaria or other types of fever therapy.

Tryparsamide is the most valuable drug which we have in the treatment of neurosyphilis and it is the main reliance in most cases. It is very safe and produces interference with vision in only about three per cent of cases. Most of these are transient and only about one per cent of cases develop optic atrophy. If interference with vision does not occur after the first three or four injections, apparently the drug can be given at weekly intervals almost indefinitely. I usually give one and one-half grams at the first injection and three grams at all other injections. Tryparsamide is a white crystalline powder which can be dissolved quickly in ten to twenty cubic centimeters of water by moderate

agitation. Only occasionally is it necessary to filter it to remove foreign particles.

In starting treatment in a neurosyphilitic case, I give potassium iodide by mouth and injections of bismuth and tryparsamide on the same day once a week. In four or five weeks bismuth is omitted and tryparsamide and potassium iodide continued. About once or twice a year during the continuance of tryparsamide injections or during a rest period, bismuth is given in weekly doses up to a total of one and a half to two and a half grams. Tryparsamide is given weekly for a variable number of injections, usually up to a total of fifty. Occasionally, as treatment progresses, a short rest period is given during which bismuth or neoarsphenamine is administered.

Bismuth, arsphenamines, mercury, bismarsen, and potassium iodide seem inefficient in neurosyphilis as far as can be determined from statistics. At the present time I am not sure whether or not they are necessary in the average case, though I still tend to use them in the hope that they will prevent visceral and dermal manifestations, such as might occur in certain cases. They will protect as far as possible those exceptional cases who during or after tryparsamide treatment might develop clinical visceral and skin syphilis. These drugs also check visceral and skin syphilitic processes which may not be evident clinically, though they may lower the individual's efficiency and sense of well being.

I believe firmly in giving regular and continuous antisiphilitic treatment without vacations. The patient is always under treatment. I try to extend the treatment over a four year period and in the average case without complications to give fifty injections of bismuth, fifty injections of neoarsphenamine, and fifty injections of tryparsamide. After about fifty injections, the tryparsamide is given every two weeks instead of weekly and then the time between injections is gradually increased three, four, five weeks or even two or three months, depending upon how well the patient is doing. According to my own experience and according to the literature such a procedure best protects the patient against any syphilitic relapse, neural, visceral, or dermal.

Private patients with neurosyphilis in my experience have been exceptionally difficult to treat. I have found many of them in the past intolerant to bismuth, arsphenamines, and even iodine. Sensi-



tiveness to iodine medication was mentioned previously. Up to the present time I have had no difficulty in using mercury and the cases intolerant to other drugs usually stand it well. I have seen bismuth intolerance manifested by gingivitis, with bismuth-stained gums and loosening of the teeth after one-tenth gram of potassium bismuth tartrate intramuscularly and in other cases after the second, third, and fourth injections of bismuth or at the beginning of the second course of bismuth. Usually bismuth intolerance is shown by gingivitis with bismuth-stained, receding gums, but occasionally it is shown by bismuth-stained areas one to two centimeters in diameter on the mucous membranes of the mouth, tonsils, or throat similar to those seen about the teeth. Gastric discomfort with slight nausea and anorexia is perhaps the second most common sign of bismuth intolerance. General weakness is next in order of frequency. I have seen as other signs of intolerance to bismuth generalized itching with or without a generalized, slightly raised, red maculo-papular eruption, lumbar backache, abdominal cramps, diarrhea, albumen in the urine, headaches and bleeding from the mucous membranes of the mouth. Usually these symptoms occur toward the end of a bismuth course and usually only one symptom occurs in an individual case. I have seen one generalized bismuth reaction with chills, fever, headache, backache, and generalized aches—the so-called bismuth gripe. Urine examinations have been made frequently during bismuth courses, but albumen and casts have been found rarely and then not associated with other signs of bismuth intolerance. Apparently the desired amount of bismuth can be given or some symptom of intolerance will usually appear before kidney irritation is shown through an examination of the urine. When any symptom of bismuth intolerance appears, bismuth is, of course, stopped immediately. Signs of bismuth intolerance or poisoning have promptly disappeared after cessation of bismuth treatment and I have never seen a patient who has had to stop work because of them.

Intolerance to arsphenamines is more common in neurosyphilis than in other types of syphilis, probably because of the greater age of the patient and his disease. It may be shown by the so-called nitritoid crisis with substernal oppression, choking, generalized flushing of the skin, nausea, vomiting, and even petechiae. All too often it is shown by

dermatitis. Before a frank dermatitis occurs, there is usually itching, at first on the arms or lower legs and then generalized. Formication in hands or feet may precede it, especially if neoarsphenamine is the drug used. Nausea, or nausea and vomiting toward the end of a course of arsphenamines may also precede it. It pays to heed these signs and discontinue arsphenamines. Even a slight generalized dermatitis should be treated seriously, as it might be followed by severe itching, generalized edema, sloughing, superficial infection, and even death. With any evidence of dermatitis I give daily, sodium thiosulphate by mouth and intravenously until I am certain that the inflammation is subsiding. Then I give it every other day and gradually increase the interval between injections. It is continued orally for some time after intravenous treatment has been stopped. Formerly I never gave arsphenamine again to a case who had had arsenical dermatitis, but within the last year I have used the patch test on one patient intolerant to bismuth, arsphenamine, and tryparsamide and on one patient intolerant to bismuth and arsphenamine in the hope that I might give arsphenamines again. To do the patch test, three-tenths of a gram of neoarsphenamine is dissolved in one cubic centimeter of water. A small piece of linen about one and one-half centimeters is dipped in this solution and applied to an area on the arm or leg which has been aseptically prepared by washing with ether. A two-inch piece of tracing cloth is put over this and held in place by adhesive plaster. If dermatitis appears under the linen patch in twenty-four to forty-eight hours as shown by itching, intensely inflamed papules or vesicles, arsphenamines are not given again. If no skin irritation or only slight irritation occurs, arsphenamines may be tried cautiously in one-tenth gram doses and gradually increased one-tenth gram each week if no signs of intolerance appear. The first patient gave a positive patch test, and has not been given arsphenamine again. The second patient gave a negative patch test, but developed on the third week about two hours after three-tenths of a gram of neoarsphenamine intravenously a so-called arsphenamine gripe with headache, chills, fever, hot and cold feelings, nausea, and vomiting. This reaction might be considered an anaphylactic phenomenon brought about by a sensitization of certain substances in the blood, probably the platelets. This particular patient was also intolerant to bismuth and had the only case of "bismuth gripe" which I



have seen. He had a slight nitritoid crisis on the first neoarsphenamine injection and during the fourth or fifth injection of his second course developed a mild arsenical dermatitis. Despite these reactions, he has never lost a day's work because of his treatment and he can take tryparsamide and mercury very well. I have found a negative patch test on two patients with nitritoid crisis. In an out-patient case with nitritoid crisis, I resumed neoarsphenamine in one-tenth gram doses after a negative patch test. On the second week she developed a severe nitritoid crisis with petechiae after a twentieth gram dose and had to be hospitalized for twenty-four hours. As an added precaution she had been given one one-hundredths grain of atropin sulphate by mouth one-half hour before her intravenous treatment. At the present time I think that it is a good policy, at least as far as neurosyphilis is concerned, not to attempt to resume arsphenamines in cases of severe nitritoid crisis.

I have seen two patients with bleeding from the mucous membranes of the mouth and one with purpuric spots on his skin after neoarsphenamine. I feel that no attempt to resume arsphenamines should be made in these patients.

I have seen no Herxheimer reactions with a sharp increase in local neurosyphilitic symptoms after arsphenamine or after bismuth.

I have seen wrist drop and foot drop which I considered due to arsenical neuritis, but fortunately I have not produced it. However I hold neoarsphenamine responsible for a case of herpes zoster, which occurred in my practice. This as well as the peripheral neuritis might have been due to neurosyphilis, but I feel that both were due to treatment. Perhaps this short account of arsphenamine reactions will show why I believe that arsphenamines should be handled with care in neurosyphilis.

Tryparsamide intolerance is reported in the literature as being shown subjectively by dimness or blurring of vision, flashes or streaks of light or scintillating sparks before the eyes, and objectively by optic atrophy. I have given over two thousand tryparsamide injections and I have found only one patient who showed any evidence of tryparsamide intolerance. This patient was a tabetic weaver who after the third injection noticed that her loom seemed to move up and down as though she were dizzy. A week later she described something like a halo of light before her eyes. Tryparsamide

was stopped and her symptoms disappeared in a few days. After several months I gave her tryparsamide again at two week intervals, as she was intolerant to bismuth and arsphenamines, and no tryparsamide intolerance recurred. At the present time she has no subjective or objective evidence of visual damage. A few months ago at the neurosyphilis clinic of the Rhode Island Hospital three women who had been given much tryparsamide developed blurring of vision within a short time after the internes started to give the injections. This was disconcerting, but in a few weeks the blurring was found to have developed from group suggestion, as the three women had discussed among themselves the questions asked by the internes in regard to blurring of vision, dimness of vision, et cetera. When the women were told not to discuss their treatment or symptoms, the blurring quickly disappeared and tryparsamide was continued without any further difficulty.

I have noticed no evidence of gastro-intestinal or skin intolerance to tryparsamide. I have given it to several patients who have had an arsphenamine dermatitis and have never had any difficulty, even though I have given as many as 68 injections to one such patient. I know of no evidence of arsenical neuritis other than optic atrophy following tryparsamide. If intolerance is not shown within the first three or four injections by some interference with vision, tryparsamide, according to the literature, can be given in full doses at weekly intervals almost indefinitely. My own experience has been in accord with this view and I consider tryparsamide a very safe drug to use in neurosyphilis.

#### *Summary*

In neurosyphilis, treatment is modified to fit the patient. It is important not to make him sicker than he is nor to make him lose his job or his self-respect.

A complete diagnostic survey should precede treatment and physical, neurological, and serological examinations should be checked at times during treatment.

During the past ten years sulpharsphenamine, bismuth, tryparsamide, bismarsen, and malaria or other types of fever therapy have been generally adopted as additions to the neurosyphilitic armamentarium.

In the average case of neurosyphilis without complications treatment is extended over a four

year period and consists of fifty injections of bismuth, fifty injections of neoarsphenamine, and fifty injections of tryparsamide. According to my experience and according to the literature such a procedure best protects the patient against any syphilitic relapse, neural, visceral or dermal.

Tryparsamide and malaria therapy check neurosyphilis better than bismuth, arsphenamines, mercury, and iodine, but these latter drugs have their place in checking visceral and dermal syphilis and they are of value if tryparsamide intolerance and contraindications to malaria therapy are present.

Tryparsamide is the most valuable drug in the treatment of neurosyphilis at the present time and gives essentially the same favorable results as obtained by malaria therapy. It can be given by weekly injection almost indefinitely. After fifty injections it is given at increasing intervals.

Malaria therapy is advised for cases abnormal enough mentally to be hospitalized.

Tryparsamide is preferred for almost all other cases of neurosyphilis.

Cases, advancing despite tryparsamide, received malaria therapy.

Cases who do not do well with malaria receive tryparsamide.

Signs of intolerance to bismuth are often noted, but they cease on discontinuing the drug and are not serious. Bismuth is safer than arsphenamine to use in neurosyphilis.

Signs of intolerance to arsphenamines occur frequently and they should be regarded as of serious import.

Signs of tryparsamide intolerance are rare and almost negligible.

## INJURIES TO THE COCCYX\*

By HENRY McCUSKER, M.D.

106 WATERMAN STREET, PROVIDENCE, R. I.

Injuries to the coccyx often cause symptoms which are very disabling, and difficult to relieve. Such injuries are encountered fairly frequently in general practice, obstetrics, traumatic and orthopedic surgery, and in industrial accident work. Yet careful search of the medical literature discloses very few contributions during recent years. Even

the text-books pass over this topic with a few general statements. The purpose of this paper is to present seven cases—each showing a different type of injury to the coccyx—and to outline the treatment employed in these cases.

The fully developed coccyx is about  $1\frac{1}{4}$ " in length and 1" in width at the upper end, tapering downward to about  $\frac{1}{4}$ " in width at the tip. It is usually made up of four segments (rudimentary vertebrae) which gradually fuse with each other as age advances. According to *Gray's Anatomy* "fusion between the first and second segments is frequently delayed until the age of twenty-five or thirty." The coccyx is held firmly to the sacrum by a group of short tough ligaments. The coccyx and sacrum are occasionally found fused, but usually a disc of fibrocartilage separates these two bones, and in some instances a synovial membrane is present—notably in women during pregnancy—which fact renders the coccyx more freely movable at the sacrum during delivery. Normal motion between the coccyx and the sacrum and between the different segments of the coccyx is through a very limited range and it is in the forward and backward directions only. During pregnancy this range of motion is increased.

On the pelvic surface of the coccyx are inserted some of the fibers of the Levator Ani muscle, while into the lateral borders are inserted the Coccygeal muscles. These muscles form part of the pelvic diaphragm and help to support the pelvic viscera. On the posterior surface originates part of the Gluteus Maximus muscle, while from the tip arises a portion of the Sphincter Ani Externus muscle, which muscle helps to keep the anal orifice closed. No nerves pass through the coccyx. The anterior division of the fifth sacral nerve enters the pelvis between the sacrum and the coccyx, while the coccygeal nerve curves around the rudimentary transverse process of the upper segment of the coccyx. Over the posterior surface of the coccyx runs the coccygeal branches of the Inferior Gluteal artery.

In direction, the coccyx follows the elliptical curve of the lower segments of the sacrum—downward and gradually forward. There are many variations from the normal curve, but if this curve is sharply exaggerated forward or backward, symptoms may arise. In most instances this displacement follows some direct violence—usually a fall upon the buttocks, a kick, a blow, or it may

\*Read before the Providence Medical Association, November 6, 1933.



occur during parturition. In the latter case the displacement is posterior, and according to Hirst it is due to the backward pressure during delivery which sometimes causes rupture of the sacro-coccygeal ligaments, dislocation, and occasionally fracture. When the displacement is due to external violence it is usually in the anterior direction and fracture is the common complication. Injuries to the coccyx are more common in women than in men, possibly because in men the coccyx is placed higher and it is guarded by the ischia which are in closer approximation. The entire coccyx is more rugged in the male than in the female.

Injuries to the coccyx may cause long lasting disturbances, the most common of which is coccygodynia—an intractible type of neuralgia in the region of the coccyx, aggravated by walking, sitting, riding, coughing, and straining during defecation or coitus. This pain may become so severe that the patient is rendered unable to perform any gainful work. Constipation is a frequent after-effect and is usually due to postponement of the painful stool. Loss of weight is a common symptom in the more persistent type of coccygodynia. Forrester states "Patients suffering from this injury sometimes become neurotic." In cases where there is a real injury, external pressure on the coccyx will cause severe pain referred along the 5th sacral and coccygeal nerves.

Position, contour, and extent of mobility of the coccyx can be determined by digital examination intrarectally. It is often difficult to differentiate between a fracture and a dislocation of the coccyx by rectal manipulation, but the direction and extent of luxation can be established by this maneuver. Careful X-ray examination is then very important as a check on the findings made by rectal examination. A good lateral film is particularly desirable to determine the presence or absence of abrupt irregularity in the curve at one of the intersegmental joints—roentgenological evidence of a luxation. In reading the films, the interpreter must guard against being deceived by anatomical variations.

CASE 1—*⊥-Shaped Fracture of Proximal Segment with Anterior Luxation*

Miss A. M., age 45, mill worker. Two months prior to the first examination she injured the lower end of her spine when she fell on cement steps. Pain in the region of her coccyx became progressively more severe and two weeks after her injury she was

forced to quit work. Coccygodynia was aggravated by sitting, walking, and climbing stairs. She also complained of severe pain during defecation with a feeling of frequency of stools. She gave a history of occasional hysterical outbursts during the preceding twelve years. Examination showed tenderness to pressure over the coccyx and some thickening over the sacro-coccygeal area. On rectal examination no crepitus could be made out but the coccyx was felt to be in forward luxation, and when manipulated posteriorly caused intense pain. On X-ray examination, in the antero-posterior view "a fairly definite ⊥-shaped fracture could be seen extending laterally between the first and second segments of the coccyx and vertically through the middle of the first segment into the sacro-coccygeal articulation." Conservative treatments were tried over a period of four weeks but gave no relief. The coccyx was then excised. The coccyx was found displaced anteriorly at the junction of the first and second segments. The first segment was found to be markedly widened and there was extensive new bone formation and irregularity in contour of this segment. Following operation she made a good recovery and has had no symptoms in the spine during the past five years.

CASE 2—*Fracture and Anterior Dislocation of the Distal Segment. Lateral Deviation of the Coccyx.*

Miss F. C., age 23, telephone operator. In November of 1929 she fell on a concrete step at her home and injured "the tip of the spine." Excepting for "soreness over the tip of the spine" she had no immediate symptoms, but after several weeks the pain over the coccyx gradually increased until work as a telephone operator became increasingly more difficult. She had treatment of various sorts by various doctors in her own city—all without relief. When I saw her in December, 1930, she had lost 15 pounds (her normal weight was 124 pounds). She complained of constant severe pain localized over the coccyx and intensified by walking and long periods of sitting. Defecation aggravated her symptoms and she had resorted to the use of frequent enemata. Rectal examination revealed the tip of the coccyx pressing firmly against the posterior wall of the rectum, tilted toward the left, and showing increased mobility in the antero-posterior direction, with extreme tenderness to pressure. X-ray examination showed "the distal segment rather widely



separated and in anterior displacement. It would appear to have undergone a fracture-dislocation." At operation the coccyx was found tilted toward the left with the distal segment projecting directly anteriorly and united to the main body of the coccyx at almost a right angle position. The tip of the coccyx was in direct contact with the wall of the rectum and had produced an erosion through part of the wall. A few days ago this patient told me she has had no symptoms since the operation.

CASE 3—*Fracture and Posterior Dislocation of the Distal Segment.*

Mr. E. G., age 42. On September 10, 1932, while at work he struck the lower end of his spine against some machinery. X-ray examination made soon after the injury showed some separation of the segments and a rotation of the distal segment posteriorly. Examination of the coccyx externally showed a prominence over the distal end—tender to slight pressure. By rectal examination the tip of the coccyx seemed displaced backward and on manipulation it was found to be fixed in that position. After three weeks of conservative treatment during which time his symptoms became more severe, resection of the coccyx was done. The excised coccyx showed the fourth segment rotated posteriorly on the 3rd and considerable enlargement of the coccyx at the junction of the 3rd and 4th segments. Four weeks after operation the patient returned to work as a machinist, and has had no recurrence of symptoms.

CASE 4—*Dislocation at the Sacro-Coccygeal Joint, Anterior Luxation of the Coccyx.*

Miss A. G., age 15. Admitted to a local hospital May 11, 1933, complaining of severe pain in the region of the coccyx. She stated that two years previously she fell and struck the tip of her spine against the sharp edge of a chair. Adhesive strapping of her buttocks gave some relief. Eight months prior to admission she fell heavily in the sitting position and again injured "the tip of the spine." She was treated at the out-patient clinic where many types of treatment were tried, but the pain became continuous and persistent, especially after short periods of sitting and during defecation. Rectal examination suggested anterior displacement of the coccyx with tenderness throughout the coccygeal region. X-ray examination showed "a sharp angulation of the entire coccyx with no fracture visible." At operation the coccyx was found

tilted sharply anteriorly at the sacro-coccygeal junction. There was a considerable amount of dense fibrous tissue about the sacro-coccygeal articulation. Recent examination showed no tenderness over the site of operation, and the patient states she is having no painful symptoms.

CASE 5—*Persistent Traumatic Coccygodynia.*

Miss D. McC., age 21, no occupation, presented herself for treatment in July, 1930. She complained of "pain in the lower end" of her spine while sitting and walking. One week previously, while playing on the beach, she fell on a rock and injured the tip of her spine. Examination showed tenderness over the coccyx and some hypermobility at the sacro-coccygeal joint. No actual deformity could be made out by rectal or X-ray examinations. Strapping of the buttocks, constant use of a rubber ring while sitting, radiant heat and other types of physiotherapy were tried—but gave no lasting relief. She lost weight and became emotionally upset at times. In January, 1931, the coccyx was excised and at operation the periosteum about the distal segment appeared noticeably thickened and difficult to dissect. Prompt and lasting relief of symptoms followed the operation.

CASE 6—*Hypermobile Coccyx.*

Miss E. G., age 19, clerical worker. Nine months previous to her first examination by the writer, she accidentally struck the tip of her spine against the corner of a low shelf. One month later she sought medical attention because of the persistency of severe pain in the region of the coccyx. On several occasions she consulted different physicians for the same symptoms but admits she carried out no regular plan of treatment. On March 9, 1929, when I first saw her, she was complaining of pain over the coccyx, not constant but aggravated by certain activities like climbing stairs and taking long strides while walking. Examination showed considerable tenderness over the entire coccyx but especially over the sacro-coccygeal junction. Rectal examination showed no deformity or displacement of the coccyx, but did show a considerable increase in the range of motion in the anterior and posterior directions, and some lateral mobility toward the left. Under conservative treatment, regularly applied over a period of six weeks, the symptoms gradually subsided. In answer to a recent letter, she states she has had no recurrence of symptoms.

(Continued on page 81)

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JOHN RIDLON	<i>President</i>	Newport
ALFRED TARTAGLINO	<i>Secretary</i>	Newport

R. I. Ophthalmological and Otological Society—2d Thursday—October, December, February, April and Annual at call of President.  
Dr. Robert C. O'Neil, President; Dr. N. A. Bolotow, Secretary.

The R. I. Medico-Legal Society—Last Thursday—January, April, June and October, Archibald C. Matteson, President; Dr. Jacob S. Kelley, Secretary-Treasurer.

#### PAWTUCKET

Meets the third Thursday in each month excepting  
July and August

J. LINCOLN TURNER	<i>President</i>	Pawtucket
HENRY J. HANLEY	<i>Secretary</i>	Pawtucket

#### PROVIDENCE

Meets the first Monday in each month excepting  
July, August and September

CHARLES F. GORMLY	<i>President</i>	Providence
P. P. CHASE	<i>Secretary</i>	Providence

#### WASHINGTON

Meets the second Wednesday in January, April,  
July and October

E. E. KENYON	<i>President</i>	Kingston
JOHN CHAMPLIN, JR.	<i>Secretary</i>	Westerly

#### WOONSOCKET

Meets the second Thursday in each month excepting  
July and August

W. A. BERNARD	<i>President</i>	Woonsocket
T. S. FLYNN	<i>Secretary</i>	Woonsocket

## EDITORIALS

### THE MEDICAL CONVENTION

From her very beginning Rhode Island has nurtured a tradition of independence which is a matter of pride in the minds of her people. Nevertheless, in these days, when co-operation in all things is so sorely needed, too great an emphasis on independence in almost any field of endeavor may be a detriment to progress. This is especially true in the field of medicine, in which provincialism and inefficiency must inevitably result from a policy of isolation.

With no implication of a sacrifice of independence in thought or action, the physicians of Rhode Island should consciously endeavor to maintain touch in an effective way with the rest of the profession. Without the benefits of a local medical school and the wide contacts which the presence of such a school involves, with our own relatively small State and district societies and, in contradistinction to our sister States in New England, our own independent JOURNAL, there is a real danger that we shall become mentally inbred. To offset



this, outside medical contacts must be encouraged. This is to some extent brought about when we import distinguished members of our profession to address our meetings or visit our hospital wards. In another and equally valuable manner the same end is accomplished when individually or in groups we leave the narrow confines of our State to keep touch with our colleagues elsewhere.

One method of keeping our medical contacts bright is by attendance at medical meetings and conventions. Of these there are a great number available to Rhode Island physicians. Besides the annual meeting of the American Medical Association there are the College of Physicians, the College of Surgeons and similar groups in every specialty, to say nothing of the various State and sectional meetings and medical school reunions. Every one of these presents opportunities for instruction and stimulation. The busy practitioner, whatever his special interest, will find in one or more of these groups the work that is appropriate for his needs and he owes it to himself and to the patients whom he serves to take this means of broadening his professional horizon, raising the standards and ideals of his work and thus effectively lifting himself out of the rut.

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#### A LITTLE MORE ON RADIO BALLYHOO

With increasing frequency one is almost moved to tears by a compassionate voice over the radio wishing to share his patent medicine with some poor sufferer. The list of such advertisers is daily growing larger. The writer has often wondered why these remedies did not sweep the country, that is, if they are really so useful in combating disease. Advertising would seem almost superfluous. Insulin or liver were not brought to attention of the public by radio and yet both were used universally in an incredibly short space of time. The best advertising for medicine, therefore, would seem to be through the medical profession itself. Of course the drug would of necessity have to be of definite value. The medical profession, by its definite contact with the public, has a powerful weapon to make ineffective and expensive the advertisement of drugs of doubtful value. A few words of caution by a physician will go a long way in deterring a prospective purchase of a nostrum.

#### INJURIES TO THE COCCYX

(Continued from page 79)

##### CASE 7—*Coccygodynia Following Parturition.*

Mrs. A. H., age 32, housewife. In May, 1930, after a fairly difficult delivery (requiring the aid of forceps), she experienced severe pain about the coccyx. Her physician states that at the time of delivery he was aware of a sudden release in the pelvic outlet after hearing a "click" at the coccyx. Ten years previously she fell on the ice and "had severe pain over the tip of the spine for several weeks." Home remedies afforded complete relief and she had no recurrences until the present injury. She was sent to me in June, 1930, at which time she was complaining of tenderness over the coccyx while sitting, and pain in that area while climbing stairs, automobile riding, and during defecation. Digital examination showed tenderness and some thickening about the sacro-coccygeal joint. No actual deformity or displacement could be made out, but there was some increase in the antero-posterior motions at the sacro-coccygeal joint with pain in that joint during manipulation. X-ray examination showed "no definite abnormalities." Under conservative treatment over a period of one month the coccygodynia subsided and has not recurred.

When the injury is of recent origin, the symptoms mild, and particularly when rectal and X-ray examinations reveal no marked displacements, conservative measures should be used in the treatment. These include rest in bed, hot sitz baths, local heat, sedatives, use of an air cushion, cathartics, and adhesive strapping to hold the upper part of the buttocks together. If luxation is present, reduction by digital manipulation rectally may sometimes be accomplished, but such reductions cannot be maintained since there is no method of actually fixing the bones in position during the healing period. Alcohol injections have been done in the effort to relieve coccygodynia, but in cases where bone injury has been demonstrated such treatment has not been successful. When the symptoms are persistent and severe, and when the displacement is pronounced, surgical removal of the coccyx should be done.

Excision of the coccyx may be performed under local anaesthesia (2% novocaine), but a general anaesthetic is preferable when the patient is in good



physical condition. With the patient in the prone position, a longitudinal incision is made over the coccyx near the median line, of sufficient length to expose the sacro-coccygeal joint and the entire coccyx. The incision is carried down through the periosteum of the coccyx. By blunt dissection the Coccygeus muscle, together with the periosteum, is freed from the lateral borders. An assistant now inserts his index finger into the patient's rectum to act as a guide, warning against surgical injury to the posterior wall of the rectum during the remainder of the operation. The sacro-coccygeal ligaments are divided with a scalpel, keeping the blade close to the upper surface of the coccyx to avoid the fifth sacral nerve. Then the coccyx is gripped at its upper end with sequester forceps and retracted while the muscle and periosteum are removed from the pelvic surface of the coccyx by blunt dissection. The External Sphincter Ani muscle is separated from the tip, and after the coccyx is removed, the muscle is sutured to the periosteum at the lower end of the sacrum with chromic gut, in order to maintain the action of this muscle in keeping the anal orifice closed. The retracted edges of the Coccygeus muscle are brought together with a chromic suture to close up the dead space left by the excised coccyx. The wound is closed in layers without drainage. The skin is closed with silk-worm gut sutures into which are tied pads of sterile gauze. The thighs are strapped together with wide bands of adhesive plaster for 24 hours. The patient is put on a non-residue diet for three days. On the ninth day the stitches are removed, and on the fourteenth day the patient is allowed out of bed. No disturbance in anal function has been observed following resection of the coccyx.

### INTERESTING CONGENITAL DEFORMITIES\*

By PAUL APPLETON, M.D., F.A.C.S.  
35 TABER AVENUE, PROVIDENCE, R. I.

Every obstetrician who is connected with a large lying-in hospital where there are any considerable number of patients, is very soon impressed by the relatively frequent delivery of deformed or unusual babies. Besides the innumerable minor abnormal-

ities, it is somewhat of a surprise to see in the course of a few months many babies so extremely deformed as to be classed as monsters or terata.

There are two types of deformity,—those which are so slight a variation from the normal as to be of little clinical importance to the child or to its parents, and those so markedly changed as to be impossible of even approximate correction, and incapable of living under usual surroundings or perhaps unable to even carry out life processes and therefore fatal.

Of these gross deformities alone, representing those which either cannot survive or cannot be brought up under normal conditions, there is a large number. At the Providence Lying-In Hospital in 1931 there were 55 such babies out of a total of 2,409 delivered. In 1932 there were 54 out of 2,750 babies delivered,—an incidence of two to three per cent. This means one may reasonably expect to deliver a monstrosity out of every fifty cases. Of these one finds a great variety. A glance at the statistics shows among this group cases of spina bifida, meningocele, hydrocephalus, cranio-rachischisis, microcephalus, cleft palate, imperforate anus, extrophies of organs, congenital oedema, idiots, hemaphrodites and many other babies with congenital absence of essential structures, or pathological duplications.

Many attempts have been made in the past to classify these bizarre individuals either in the language of superstition, embryology or pathology. The simplest method, however, is that which recognizes two large groups—single monsters and double monsters. The single ones are again classified into:

1. Monstra per defectum. (Those showing defective structures.)
2. Monstra per excessum. (Those showing excess in numbers of organs or parts of organs or enlargement of the same.)
3. Monstra per fabricum alienam. (Those showing change in design or distribution of organs or systems.)

The first of these groups in which defective development has occurred is usually the result of imperfect fusion of the lateral halves of the body. Examples are found in anencephalus, spina bifida, cleft palates, extrophies, hypospadias, etc.

The second group of excessive development are represented by overgrowths, either symmetrical or at random or extra structures such as large ex-

\*Read before the Providence Medical Association, Dec. 4, 1933. Accompanied by motion pictures.

termitities, supernumerary breasts or nipples, polydactylism, and many cases of pseudo-hemaphroditism.

The third group, which includes normal structure but pathological distribution, are exemplified by cases of situs inversus, and some of the congenital dislocations.

Monstra duplica, or double monsters, are those in which a single ovum has developed two primitive streaks, but fission has become incomplete. In other words, the anlagen of twins has been incomplete, resulting in various degrees of anadydimos,—two heads and one body; or katadydimos, two sets of legs and one body, and other so-called types of "Siamese twins."

The exact etiology of these terata is of course unknown, but we do know that the beginning of deformities occurs in the early embryonic state in most cases—probably in the morula stage and probably within three weeks after conception. Later mechanical conditions or traumata may alter a normally formed foetus, such as amputations from cord pressure, changes resulting from amniotic adhesions, or other alterations from deficient foetal function caused by imperfect placental-maternal interchange. Neoplasms may be found of idiopathic origin, probably due to embryonic cellular metaplasias, and perhaps to toxemias. Certain parental toxemias, either maternal or paternal, probably account for some of the pathological babies. However, it should be here emphasized that *there is no evidence that the mental state of the mother, or so-called maternal impressions, are responsible for the development of monstrosities, deformities, or birth marks.*

There is, however, definite experimental evidence and statistical proof that the tendency to produce terata is familial, and often repeats according to atavism, that is, inheritance from remote ancestors, or from grandparents by skipping a generation.

Deformities may be produced experimentally in animals by poisoning, altering, or traumatizing the fertilized ovum, and these deformities resultant are inherited in succeeding generations. One of the easiest terata to produce experimentally is said to be the cyclops, and it is listed as one of the commonest of human deformities, but strangely enough we have seen it only once in two years at the Lying-In Hospital, that is one case in more than six thousand babies.

The diagnosis of a foetal monster during pregnancy is rarely made. Certain types of gross deformity such as hydrocephalus, anencephalus, and microcephalus may be made out. We know that in cases of polyhydramnion, a deformed baby will usually be delivered. We know also that a baby that presents a single abnormality is likely to have multiple deformities. For instance, in a breech delivery, when clubbed feet appear, one might reasonably expect to go on and find a spina bifida and possibly a hydrocephalus or an anencephalus. The increasing use of the Roentgen ray in obstetrics ought to lead us more frequently to a prenatal diagnosis of monstrosities. It is fair to imply that in any case of suspected multiple pregnancy or a foetus grossly abnormal by objective maternal abdominal examination, an X-ray study of the situation is indicated.

One might ask why attempt a diagnosis, for we can do nothing about the unfortunate foetus. True, but given a diagnosis of a monster one may alter the mode of delivery so as to subject the mother to a minimum of needless suffering and trauma. For example, a diagnosis of hydrocephalus, especially in the after-coming head of a breech case, should lead us away from a difficult extraction in status quo, towards a perforation and collapse of the head to save maternal damage.

The prognosis and treatment of the delivered monster will of course vary with the degree and extent of the deformity. Gross and multiple abnormalities are usually inconsistent with life and are fortunately fatal. Minor variations are amenable to surgical repair and metamorphosis. Some of them require immediate surgical intervention, such as cases of imperforate anus. The operation should be undertaken even at great risk, for there is little to lose and much to be gained.

Each case resolves itself into an individual problem, modified by individual factors, and may require the judgment of several consultants to determine the modus operandi of giving the unfortunate child its best chance for a reasonably normal future. One should not cast aside as hopeless even the many discouraging deformities. There are notable examples of genius in individuals who have been of inestimable value to the world in spite of their congenital handicap.

The prophylactic treatment is of some importance, and should be based on family or personal history. The histories of many terata reveal me-



tallic poisoning in one or both of the parents, and this matter should attract our attention. The incidence of terata from parents who have singly or together been subjected to large doses of radium or X-rays is suggestive. Familial tendencies to the production of monsters ought not to be ignored in matters of premarital advice. The whole question is but another argument against consanguinous marriage and in favor of the basic principles of Eugenics.

It is conventional to congratulate parents upon the birth of a child. It would seem to be more to the point to congratulate any baby that is well born, of clean, healthy parents. The most serious potential accident of life is the accident of birth.

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## SOCIETIES

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### THE RHODE ISLAND MEDICAL SOCIETY

The regular quarterly meeting of the Rhode Island Medical Society was held Thursday, March 1, 1934, at the Medical Library, and was called to order at 4 P. M. by the President, Dr. Charles S. Christie.

The minutes of the December meeting, the February meeting of the Council and the February meeting of the House of Delegates were read by the Secretary and approved.

The President announced the appointment of Dr. R. Morton Smith, West Warwick, as Anniversary Chairman.

In the place of Dr. A. P. Noyes, who was unable to serve on the committee to Investigate Health Clinics, Dr. Harvey B. Sanborn, Providence, R. I., was appointed by the President.

The following delegates to the New England Medical Societies were appointed by the President: Maine—Dr. A. M. Merriman, Bristol R. I.; Dr. D. S. Latham, Auburn, R. I. New Hampshire—Dr. H. A. Lawson, Providence, R. I.; Dr. C. S. Westcott, Providence, R. I. Vermont—Dr. H. W. Hopkins, Warren, R. I.; Dr. F. G. Taggart, East Greenwich, R. I. Massachusetts—Dr. Geo. Mathews, Providence, R. I.; Dr. Isaac Gerber, Providence, R. I. Connecticut—Dr. C. F. Deacon, Providence, R. I.; Dr. D. Frank Gray, Providence, R. I.

The President announced the deaths of the following members since the last meeting of the Society:

Dr. Thomas E. Duffee, died in December, 1933

Dr. H. P. Lovewell, died Jan. 1, 1934

Dr. A. C. Sanford, died Feb. 2, 1934

Dr. J. J. Walsh, died Feb. 14, 1934

Dr. Joel A. Webb, died Feb. 20, 1934

Dr. William S. Sherman, died Feb. 28, 1934

and referred the matter of obituaries to the Committee on Necrology to report at the June meeting.

Dr. Arthur Ruggles, chairman on the Committee on the Needs of the State Hospital for Mental Diseases, presented the following report:

"The Committee appointed by the President to cooperate with the Superintendent of the State Hospital for Mental Diseases reports that they are in favor of the plans of the State Welfare Commission for increasing the present facilities at the State Hospital, and believe that the present overcrowding should be relieved as promptly as possible by carrying out the building program submitted in the reports of the State Welfare Commission.

Arthur H. Ruggles, Chairman"

"Mar. 1, 1934."

It was moved and seconded that the report be accepted and spread on the minutes, and that the committee be continued. Dr. J. S. Kelley inquired as to the ultimate disposition of this report, stating that he felt that it should be called to the attention of the Governor and State Legislature. He moved that the report be accepted as a report of progress. The motion was not seconded and the chair ruled that the original motion which included the continuation of the committee constituted a report of progress. There was no appeal from the ruling of the Chair, and the original motion was carried.

The following program was presented:

1. "Medical and Surgical Causes of Mental Diseases"—Case Reports, Dr. Hugh E. Kiene, Providence, R. I. Discussion by Drs. Kramer, Burgess, Lott, and McCann.

2. "Diaphragmatic Hernia." 1. Medical Aspects, Dr. S. Morein, Providence, R. I. Illustrated by X-ray demonstrations. 2. Surgical Aspects, Dr. P. E. Truesdale, Truesdale Clinic, Fall River, Mass. Illustrated by talking moving pictures and supplemented by similar pictures showing the



origin, course, and distribution of the first cranial nerve as prepared by Dr. Truesdale for teaching purposes. Discussion by Drs. Halsey DeWolf, B. Earl Clarke, and Albert Miller.

Dr. Frank Adams, who was to have read a paper on Middle Ear Disease was called away and was unable to present the paper at this meeting but it will be read at the June meeting of the Society.

After adjournment a collation was served.

Respectfully submitted,

J. W. LEECH, M.D., *Secretary*

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#### KENT COUNTY MEDICAL SOCIETY

##### Secretary's Annual Report, 1933.

At the beginning of the year, Kent County Medical Society had enrolled 21 members. One member died and three new members were added, leaving 23 members on the active list.

A recent survey shows there are 11 physicians who reside in Kent County who are not members of this Society. At least two of these are not in active practice, one belongs to Providence Medical Society, leaving eight physicians who should be members of this Society.

The Society held ten monthly meetings during the year. By agreement the Society never meets in July and August.

The attendance on each meeting was as follows: January, 12 present; February, 8 present; March, 9 present; April, 13 present; May, 12 present; June, 14 present; September, 9 present; October, 11 present; November, 6 present; December, 13 present; average attendance, 10.7 or 50 per cent.

Only three members, the President, the Secretary and the Treasurer, made 100% attendance. Three members failed to attend any meetings. The others attended from 30 to 70% of the meetings.

Ten papers were read at nine of the meetings on the following specialties of medicine:

Ophthalmology, 2 papers; orthopaedics, 1 paper; general surgery, 1 paper; gynecology, 2 papers; anaesthesia, 1 paper; obstetrics, 1 paper; neurology, 1 paper; President's annual address, 1 paper.

These papers were all of practical value to the general practitioner, and as will be observed covered nearly every field in the practice of medicine.

Since good attendance is the first essential of a well functioning medical society, your Secretary urges every member to be present at every meeting if possible. That each member takes an active part in the discussions, and to stand ready and willing to prepare scientific and practical papers of interest to the members of the Society.

The following are the newly elected officers for 1934: President, Dr. John A. Mack, 1575 Main Street, West Warwick, R. I.; Vice President, Dr. Fenwick G. Taggart, 1 Montrose Street, East Greenwich, R. I.; Secretary, Dr. L. J. Smith, Apponaug, R. I.; Treasurer, Dr. J. F. Archambault, Gardner Street, West Warwick, R. I. Censors: Dr. Charles E. Phillips, 294 Main Street, East Greenwich, R. I.; Dr. Harold L. Collom, Apponaug, R. I.; Dr. J. F. Archambault, Gardner Street, West Warwick, R. I.

Respectfully submitted,

L. J. SMITH, M.D., *Secretary*

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## BOOK REVIEWS

THE PURCHASE OF MEDICAL CARE THROUGH FIXED PERIODIC PAYMENT, by Pierce Williams. A publication of the National Bureau of Economic Research, 51 Madison Ave., New York, 1932.

This book is a report of investigation of the different methods already being used in the United States by which individuals in consideration of a fixed payment are assured of medical or hospital care. The report does not take up the Workmen's Compensation Law. It also does not take up accident and health insurance which pays cash benefits. It deals only with the purchase of medical care through fixed payments.

The report does not attempt to criticize or to evaluate the different types of group medicine discussed. It gives merely a painstaking and accurate description of what the different groups are doing.

Fixed payment medical service has considerable development in the lumber and mining industries of the Northwest, in the mining industries of the Rocky Mountain states, in the coal mining industries throughout the country, and in the railroad systems. Although there is no uniformity of plan,

in general these industries built up a medical system to take care of Workmen's Compensation cases and this system has expanded to take care of all sickness among workmen and their families. For this a certain sum is deducted from the wages. These industrial systems grew up largely because the employees lived in country districts where adequate medical care could not be obtained.

Other types of fixed payment medical service are found. Some Private Group Clinics offer this service, chiefly in the Middle Western states. Most interesting examples of Community Health Associations are those of Brattleboro and New Bedford.

This book is an excellent reference book for information on health insurance in kind as practised in the United States.

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THE HISTORY OF DERMATOLOGY, by William Allen Pusey, M.D., LL.D.; Professor of Dermatology Emeritus, University of Illinois; Sometime President of the American Dermatological Association and of the American Medical Association. First edition. Cloth. Price \$3.00. Pp. 223 with 33 illustrations. Springfield, Ill.: Charles C. Thomas.

This is the first book, in English, to give us a history of dermatology. The author, evidently, has spent a good deal of time in delving into the beginning and development of dermatology and he has given it to us in a most readable and interesting way.

He tells us that thirty-five hundred years ago the Egyptians began to study anatomy and physiology. Various skin troubles were recognized as dermatitis, scabies, ulcers, buboes, moles and alopecia areata. Even at that time much consideration was given to personal appearance, for gray hair, baldness, moles and wrinkles were treated by amazing concoctions, and cosmetics even then came in for much attention.

Greek medicine had a real scientific quality, and the Greeks were strong proponents of personal hygiene and cleanliness.

In contrast to this scientific foundation of the Greeks, who depended upon clinical observation and a rational explanation of disease, we note a substitution of a philosophy of medicine by the Romans, of whom Galen is the most famous. He tells us of the important advances of the Arabians who first described smallpox.

Beginning with the sixteenth century, we have the most productive period in history. The discovery of the microscope opened up a great field, and anatomy, physiology and pathology were developed to the limit of the resources of existing knowledge. From that time on there was a steady advance in knowledge, and the advances in dermatology went hand in hand with the advancement of medicine in general.

The various parts that eminent men in France, Italy, Germany and England played in the progress of dermatology and medicine are told in a very interesting manner. As may be expected, most of the pioneer work was done in these countries, but in the nineteenth century the United States began to do its part. Along with the narration of the advances, Dr. Pusey has given us the titles of all epoch-making publications of these pioneers. Last but not least, he has inserted an historical index of dermatology which, he says, is probably the only one in existence. It is an extremely interesting and valuable index.

The book is very readable and may be read by every physician with much benefit.

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RADIOLOGIC MAXIMS, by Harold Swanberg, B.Sc., M.D., F.A.C.P., Editor of *The Radiological Review*, Quincy, Illinois. With a foreword by Henry Schmitz, A.M., M.D., LL.D., F.A.C.S., Professor of Gynecology and Head of the Department, Loyola University School of Medicine. Cloth. Price, \$1.50. Pages, 126. Quincy, Illinois: Radiological Review Publishing Company, 1932.

The book consists of short paragraphs or "maxims" on X-ray subjects, together with quotations from well known physicians on X-ray topics. The contents are grouped under headings of 1. General, 2. Diagnosis, and 3. Treatment; with regional subdivisions for each. A fairly complete index is appended.

While the subject matter attempts to embrace the whole field of X-ray diagnosis and treatment, it is not sufficiently complete to be regarded as a text book nor as exhaustive as a monograph. For the most part the statements appear to be correct but they are occasionally subject to the half truths of all epitome.

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It is quite evident from the whole tone of the book, that it constitutes an effort to "sell" X-ray service to the rest of the profession. The preface states that it is hoped the book will prove useful to the general practitioner. In other words, the aim is that the aforesaid G. P. will refer more cases to the roentgenologist.

The *field* of roentgenology needs no such "insidious propaganda" although it might seem that the *practice* of roentgenology needed more patients in these troublesome times.

The continuity of the book is similar to that of a scrap-book and the contents worth as much.

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DISEASES OF TRADESMEN by Bernardino Ramazzini; SILK HANDLERS' DISEASE by Herman Goodman. Medical Lay Press, New York City, 1933.

Herman Goodman says, in his preface, that a short time before undertaking the study of skin disorders of silk workers, the name of Ramazzini was practically unknown to him. Many physicians could easily make similar statements.

We should be grateful to him for so splendidly recalling to us one of the greatest minds of the seventeenth century, that of a man who stands in one of the highest positions among the forerunners of modern medicine.

Bernardino Ramazzini was born in 1633 in Carpi, Italy, and died in 1714, professor of medicine in the famous University of Padua. He left, among other works, the "Disease of Tradesmen," which, from the original Latin, was translated into English, French and German and went through many editions as one of the most valuable textbooks of the time.

From this book Herman Goodman has selected excerpts dealing chiefly with skin disorders among workers of various trades. This subject is of particular interest to the dermatologist. Ramazzini's description of these diseases is as modern as though he had lived in our generation.

The second part of the book is devoted by Herman Goodman to a personal extensive study of Dermatitis of the hands and forearms of employees in a silk mill, and constitutes a most valuable contribution to the knowledge of the complex occupational disorders of the skin.

## Editorial Notes

Dear Doctor:

"The Journal" and the Co-operative Medical Advertising Bureau of Chicago maintain a Service Department to answer inquiries from you about pharmaceuticals, surgical instruments and other manufactured products, such as soaps, clothing, automobiles, etc., which you may need in your home, office, sanitarium or hospital.

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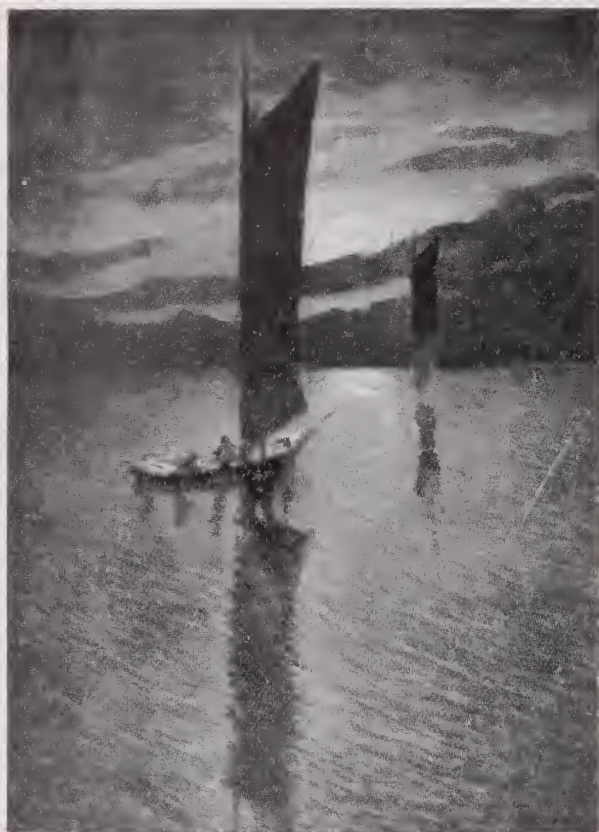
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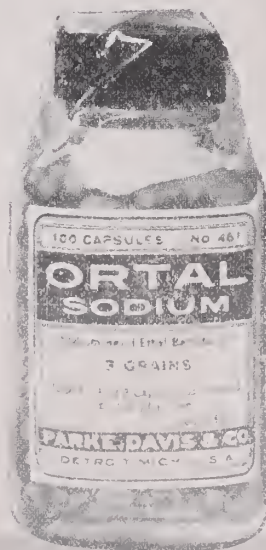
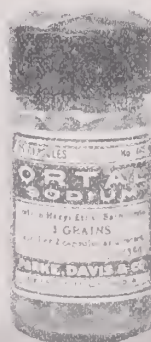
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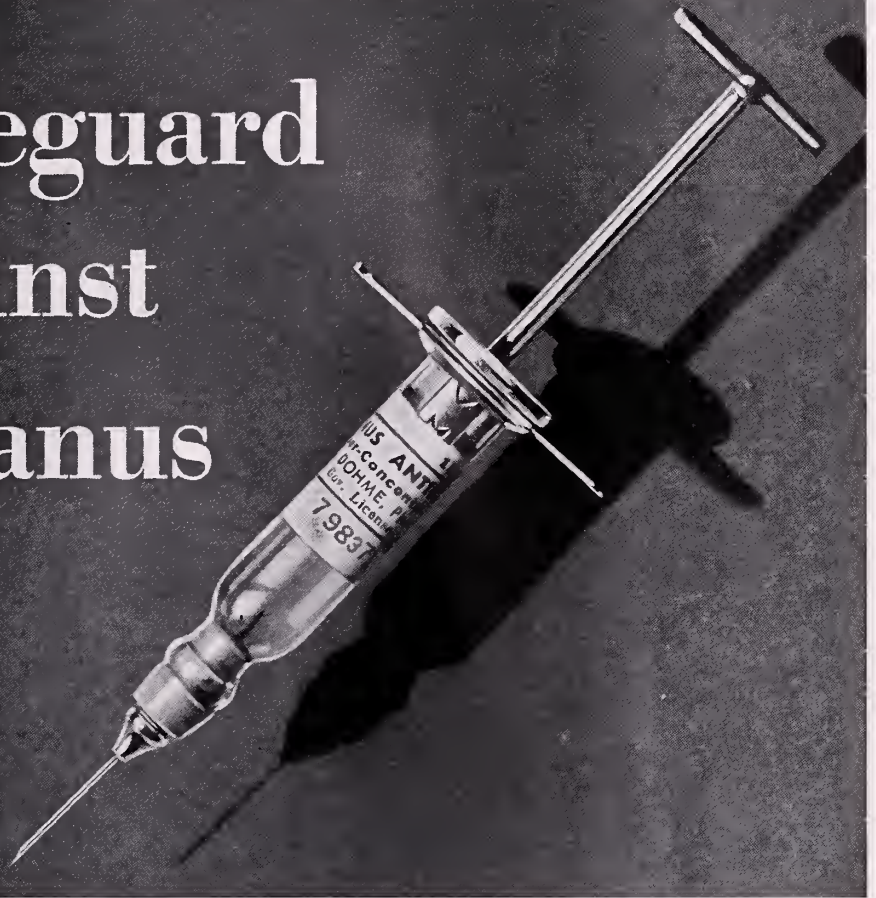
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VOLUME XVII { Whole No. 297  
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## ORIGINAL ARTICLES

### PULMONARY CARCINOMA\*

Illustrated by two cases autopsied at the  
Homeopathic Hospital of Rhode Island  
(Lanternslides)

By CONSTANT E. SCHRADIECK, M.D.  
*Pathologist*

65 HAZARD AVENUE, PROVIDENCE, R. I.

*Mr. President, Members of the Society,  
and Guests:*

The topic of this paper is two cases of pulmonary carcinoma, one of primary and one of metastatic origin, on which I performed the autopsies at the Homeopathic Hospital of Rhode Island in 1931 and 1933 respectively. It is a pleasure gratefully to acknowledge the help given to me by Dr. Clarke of the Rhode Island Hospital, who made lantern-slides from my sections, and by Dr. Hunt of the Homeopathic Hospital, who made lantern-slides from the X-ray findings and the gross specimens. The case of primary carcinoma of the lung I will present first.

The patient, a 53 years old married lady, was admitted to the Homeopathic Hospital June 30, 1931. Family history: One brother died of tuberculosis, otherwise non-essential. Nine years ago she had her uterus and ovaries removed; nothing malignant was seen then. At this time her complaint is coughing and pain in the left side of the chest. She says that she has lost weight and looks somewhat emaciated. The respiratory excursions of the chest are equal but shallow. The breath-sounds are increased at the apices. No rales were heard. Heart action regular, rate about 90 the minute. No murmurs were heard. Blood-pressure 130/78. The examination of the abdomen showed no tumors, no tenderness, no distension.

The thoracic pain is really the chief complaint of the patient and remained it. At times it could be relieved but always recurred, ranging in intensity from a dull pressure to sharp exacerbations, and it

generally increased toward the end. She coughed, but raised little sputum which on one day only appeared streaked with blood. That day it contained cylindric epithelial cells. Expectoration was not a prominent feature, her cough being rather unproductive. Examinations for tubercle bacilli were negative. About the beginning of September the patient refused food more and more and, rapidly declining, she became increasingly uncomfortable, occasionally nauseated and grew progressively weaker. On account of the steadily increasing thoracic pain the last X-ray film was taken in her bed. The temperature remained quite steadily between 100 and 101. With increasing weakness and emaciation she passed away September 27.

Discussing the pathology of the case, let us first look up the X-ray findings. Four such studies were made, but it will suffice to show the first film, which was taken upon admission, and the last one, taken 10 days before the end. (Demonstration.) The very first film showed a quite definitely outlined ovoid shadow in the right upper thorax and also a more diffuse density in the left upper pulmonary field. Both of these shadows increased in size, as the subsequent examinations showed, and also a number of smaller outlying nodular shadows came gradually into view, scattered about the periphery of the larger ones. The autopsy was held September 29, 1931. Somewhat condensed, the gross findings were as follows: The heart was found small, hypoplastic. It weighed only 180 grams and showed no localized valvular disease. The upper lobes of both lungs are extensively adherent to the costal pleurae. Both upper lobes are the seat of large globular masses of what appears grossly as neoplastic tissue. This appears medium-firm on palpation and consists of a doughy grayish to yellowish and pink tissue flecked with small areas of hemorrhage here and there. The consistency is slightly firmer than that of gray hepatization. Each of these masses located within the upper lobes is about the size of a small orange. Another rounded mass of similar appearance was seen within the upper part of the left lower lobe. This is of about one-half the size of the others. The tissue as viewed and palpated grossly is distinctly not pulmonary tissue. Grossly

\*Read before the Rhode Island Medical Society on December 7th, 1933.

it has no clearly outlined structure and within the center has undergone degenerative changes resulting in a sort of crumbly tissue debris. These masses of degenerating, presumably carcinomatous, tissue are surrounded by compressed and congested pulmonary tissue. Limited areas of the degenerated neoplastic tissue are undergoing autolytic liquefaction. The presence of several smaller and well and also below the pleural and within the lower lobes are apparently local tumor-metastases. The trachea and the main bronchi below the bifurcation showed no gross pathology. The larger bronchi were cut open posteriorly as far as possible. The upper bronchial branches seemed to end within the tumor-masses occupying the upper lobes. Before such fusion with the tumor-masses the bronchial lumina were not found invaded with papillary projections. Only a slight nodular thickening could be seen here and there. (Dem.)

We will proceed to the analysis of the histological texture of the tumor, its manner of growth and metastases, with the help of some of our slides. Langhans contended that many of the bronchial cancers—and practically all of the primary pulmonary cancers—are supposed to be bronchiogenic, originate within the bronchial glands. These occur throughout the bronchial tree, where they lie below the muscularis mucosae, as far as the cartilage is found within the bronchial wall. Cartilage occurs until the bronchial lumina have reached a diameter of about one mm. Histologically they are mixed glands, muco-serous glands, showing both mucoid and albuminous cells. The latter stain deeper and cap the mucoid cells as *démilunes*. These do not secrete mucus and, according to Maximow, are not convertible into mucoid cells. In our slides (Dem. of slides 3, 4, 5) these bronchial glands appear tumefied, and one gains the impression that the tumor actually starts in them, in as much as they show both intact glandular acini and also cylindrical and pleomorphic tumor-cells and the tumor-formation occurs within the structural limitation of these glands. From here they could spread by way of the ducts of these glands to the bronchial lumen and by way of the lymphatics to the bronchial mucosa which they infiltrate and tumefy. They also would grow within the peribronchial lymphatics and from here could invade the adjacent pulmonary alveoli. Thus, wherever that occurs, a focus of tumor-tissue is established which will grow by its own proliferation expansively. (Slide 5.) Once the pulmonary alveoli are invaded, it will invest

these and will grow both by further invasion of them and of the lymphatics of the alveolar ducts thus infiltrating the pulmonary stroma until a sizable tumor is formed (slide 6) which on the lymph-way will metastasize to the peribronchial and mediastinal lymphnodes (slides 7, 8, 9) and also invading venous and arterial vessel-walls, as we can see in some of our slides (Dem. of slide 10), will metastasize further on the bloodway, either setting up a metastasis in some distant part of the lung if an arterial branch is invaded, or by reaching the systemic circulation setting up a peripheral metastasis, say, e. g., in some part of the skeleton, if a pulmonary vein is invaded. The tissue of the main-tumors as well as that of outlying nodular metastases in the pulmonary tissue and also (slide 9) the tumor-tissue which has invaded the parabronchial and the mediastinal lymph-nodes metastatically shows essentially the same structure and is made up of rather large cylindrical and polyedral cells of a somewhat pleomorphic character. In one or more layers the tumor-cells either invest the walls of preformed spaces, as f. i., of lymphatic vessels or of pulmonary alveoli, or, if they fill these spaces more solidly, they can be seen trying to form acini even within the bounds of a more solid alveolar growth. With reference to its histological classification the tumor should, therefore, be classed as an adenocarcinoma. (Slides 11-15.) In addition to what has been said about the autopsy-findings, it is to be noted that metastases were also found within the bodies of the sixth and fifth thoracic vertebra. No further metastases were noted except, as stated, within the peribronchial nodes. The abdominal organs were all examined. Spleen and liver were found atrophic and of subnormal size. There was a general enteroptosis. Uterus and adnexa had been removed eight years ago. The cervical stump was inspected. No evidence of tumor-tissue was seen in the abdominal organs. There were no metastases in the liver.

In the complete absence, then, of any other tumor in the body which could be considered primary, and judging by the gross and the microscopical appearances, as set forth, we will have to designate our case as an adenocarcinoma of the lung, primarily originating there either from the mucoid glands of the bronchial wall, or from the bronchial surface-epithelium or both and growing bilaterally.

Sporadic records of the gross lesions of primary carcinoma of the lung date back from the beginning to the middle of the last century. Jaccoud in Paris



distinguished it first clearly from phthisis. The earliest microscopical studies were published about the early seventies of the last century. Since then the literature has considerably increased and at this time comprises probably well over 600 cases. The disease prevails in the male sex, showing the highest incidence between the fourth and the fifth decades of life. In a series of 106 cases Perrutz located 35% in the left and 54% in the right lung, while 10% were bilateral.

Talking about etiology, all one can do is to separate the cases from the clinical observation and the post-mortem examination, of which no further definite findings are available for the discussion of a possible causal connection from those with such findings on record. A certain group of cases belong to the first class. In these the disease develops apparently in previously normal parenchyma. Another and prevailing number, however, shows other conditions associated with the disease which permit of the discussion of etiology.

Chronic irritation is recorded as an etiological factor in connection with primary pulmonary carcinoma. That, in itself, is quite in keeping with that same cause of carcinoma elsewhere in the body. That such irritation will, of necessity, cause the perversion of orderly restrained normal tissue-growth regeneration into frank neoplastic cell-autonomy—that of course is not inferred by this statement. Quality, intensity, dosis and duration of such irritation will have much to do with that, just as intensity, dosage and duration of the actinic rays or the X-ray may incite various modifications of tissue-reaction in organs or body-surfaces exposed to these agencies. If, however, inflammatory tissue-reaction associated with alterations in the stroma exists for a considerable length of time leading to obstruction of lymphatic drainage and to changes in tissue-tension, so that local toxic damage of a certain order acts persistently upon a limited area of epithelial membranes or other parenchyma: then the cellular complexes exposed to such damage may become anaplastic, and their normal functional stimuli being overshadowed by the abnormal chronic irritation, the organic differentiation of the cells is no longer sustained by functional ends. The energy of their altered metabolism then manifests itself as autonomous growth either altogether without any functional relationship, i. e., purely neoplastic or with quantitatively or qualitatively distorted function associated with more or less ana-

plastic newgrowth, as, f. i., in certain tumors of the endocrine glands.

Writing in his treatise on neoplastic diseases about primary carcinoma of the lungs, Ewing states that tuberculosis is the chief cause. Other authors, as Oertel and Boyd, make less of that point and regard it more as a coincidence. Nevertheless it might as well be emphasized here that there are numerous instances of various types of neoplastic disease on record which were found associated with frank tuberculosis. That happens, f. i., occasionally in the Fallopian Tube. Here tuberculosis is sometimes associated with a marked hyperplasia of the tubal mucosa-epithelium which may pass into frank carcinoma. Ewing mentions that combination and I recall to have seen such a case myself. Again: Cases of lupus vulgaris of the skin often show a marked heterotopic down-growth of the epidermis which at times may become anaplastic and then pass into the state of lupus-carcinoma, a condition developing as well in the active lesions of lupus as in the scar-tissue of these lesions and taking the form of adult tubular acanthoma with marked tendency to metastasize. Another instance is Hodgkins disease. The connection of this lymphoblastoma with tuberculosis and its passing from the initial state of granuloma to that of a highly destructive malignant anaplastic lymphoma is much discussed. Ricker's case (quoted by Ewing) of association of active tuberculosis with a widely metastasizing and rapidly growing lymphosarcoma I witnessed myself as a medical student in the Pathological Institute of the University of Rostock. Instances of this type could be enlarged upon. The irritation associated with tuberculosis apparently leads occasionally to ektodermal or mesenchymal anaplasia resulting into autonomous neoplastic growth. In our case tuberculous lesions were present and appear in the slide, and another case is hence established of the coexistence of tuberculosis with carcinoma primary in the lung.

That chronic infections other than tuberculosis may be considered in that connection appears also from a number of cases on record. Also chemical irritation figures as a causative factor. Ever since about the year 1500 it was known that a considerable number of the workers in the cobalt mines of Schneeberg in Saxony died of some lung disease characterized by cough, dyspnoea, loss of weight, pain in the chest and mucopurulent or hemorrhagic sputum. Investing a series of these cases over a period of several years, Schmorl found in 21 of

them carcinoma of the lung fifteen times, that is, in 71% of his cases. He believed that the injury to the lungs leading to cancer was wrought by gaseous combinations freed from the arsenic containing ores by mould fungi. The experimental work carried out with coal-tar on animals (either by intratracheal insufflation or by tarring the skin of mice and observing among other lesions pulmonary carcinoma caused presumably by systemic resorption of that irritant) is another case in point. In this connection it may also be recalled that chronic irritation of another kind was employed in experimental cancer work on rats by Fiebiger, who produced gastric cancer with pulmonary metastases in these rodents by infesting them with a nematode-parasite symbiotic in cock-roaches, the tumor-tissue developing eventually about the bodies and the ova of the parasites thus implanted in these feeding-experiments into the gastric mucosa. More recently Bullock and Curtis have produced malignant and widely metastasizing tumors, partly of mesenchymal origin and partly of cancerous nature, by feeding the ova of another parasite, the taenia crassicolis, to rats. This parasite is often found to infest the intestine of the house-cat. Fed to rats the ova of these taeniae are carried as larvae from the gastric and intestinal mucosa of the infested animals to the liver by way of the portal circulation and the cystic stage of the parasite develops within the liver-tissue. After several months of latent growth the toxic irritation caused by the presence of these cysts produces an inflammatory tissue-reaction which, in a certain percentage of the cases, leads to true neoplastic anaplasia and to various forms of malignant tumors which may metastasize widely and can also be transplanted to other animals of the same species.

Primary pulmonary carcinoma is apparently increasing. It is disputed as to whether the cause of that might be the increasing gross contamination of the atmosphere in our industrial centers or of habitual inhalation of irritating dust from disintegrating road-material, as asphalt and tar products, crude oil and others, or of a combination of these agencies acting upon chronic inflammatory pulmonary lesions of infectious origin. Whatever the cause may be, it is apparently on the increase due to some such causes and not simply because more cases are investigated and properly diagnosed than in former years, though that might contribute to a certain extent, more elaborate and complete records now being available of the disease.

With reference to the origin of the carcinoma within the lung three possible sources are generally considered, namely: the bronchial surface epithelium, the epithelium of the bronchial mucous glands and the alveolar epithelium of the pulmonary parenchyma. Only in less extensive tumors which come to observation at a comparatively early stage the question as to origin can be settled with some degree of certainty. Tumors arising either from the bronchial glands or the bronchial surface-epithelium infiltrate the submucosa of the bronchial wall. Occasionally they form papillary projections into the bronchial lumen which can be visualized with the bronchoscope and may lead to stenosis and occlusion causing formation of bronchiectatic cavities, areas of pneumonic infiltration, pulmonary abscess, cavitation with or without hemorrhage. The tumors arising from this source are sometimes of the squamous and sometimes of the cylindercell-variety. The tumors which arise from the bronchial glands are said often to show much mucoid degeneration, but other varieties of cylindercell-adenocarcinoma may also arise from this source. The grossly so called nodular forms which may occur bilaterally and may infiltrate extensive areas of the pulmonary parenchyma, may arise promiscuously from the alveolar epithelium and that of the smaller bronchi. Again, there occur more rarely quite diffuse forms of primary pulmonary cancer which infiltrate the whole lung and, on the post-mortem table, look very much like a diffuse lobar pneumonia in the stage of gray hepatization, of decidedly firmer consistency, however, on palpation. I remember well to have seen such a case in 1925 which came to autopsy at the Rhode Island Hospital. (Dem. of slides.)

Microscopically one sees in pulmonary cancers a considerable variety of cells: the squamous type, the cuboidal cell type, the more fully differentiated cylindrical cell type, further flattened cell types approaching spindle-form, the so called oat-grain cell type, and also more irregular polyedral and round cell types of anaplastic appearance.

Within the lung the tumor-tissue spreads by lymphatic extension involving by orthograde extension the bronchial and mediastinal lymphnodes. That happened in our case. At times retrograde spreading along the lymphatics may also occur and then the tumor may reach the pleura and, spreading there, may, by continuity, even infiltrate the thoracic cage. Again, it may spread by invading the smaller pulmonary arterioles and the capillary sys-



tem of the lung and hence reach the systemic circulation by means of the pulmonary veins. That, too, has happened in our case and in some of the sections tumor-tissue can be seen within cross-sections of smaller pulmonary veins. That explains the peripheral invasion of other organs which, in our case, appears to have been limited to the skeleton. A defect caused by tumor-metastasis was seen in one of the vertebrae as mentioned in the autopsy-record. As to whether the bilateral occurrence of the tumor was simultaneous, i. e., multicentric, or whether tumor-material was aspirated from lung to lung and grew out again by implantation from the bronchial mucosa, that is difficult to decide. Transmission of tumor-tissue by aspiration to other distant parts of the respiratory tract is considered a quite possible mode of spread by some authors, whereas others, among them Ewing, doubt it. In two of our slides tumor-tissue was seen within bronchial lumina. In one of them it had replaced the mucosa and had formed a perfect lining of the bronchial wall; in another a cast of well staining tumor-cells filled the lumen of a bronchus, the wall of which was still invested by original bronchial epithelium. Morphologically these tumor-cells showed no degeneration and appeared capable of becoming the matrix of a secondary implant.

The second case which is before us today has the following record: The patient, a 62 years old white man, complained of pain in the left hip and knee, of about seven weeks duration. Previously he felt perfectly well and gives no history of an injury. He owned an ice-truck, thought that he had caught a cold. No history of traumatic strain. He went to several physicians and also received osteopathic treatment. The treatment consisted in medication, strapping and manipulation. Lastly he was seen by an orthopedic surgeon who suggested an X-ray examination, which was done in the X-ray Department of the Homeopathic Hospital of Rhode Island. The films showed destruction of the left transverse process of the third lumbar vertebra. (Dem. of slide 17.) A chest film showed a circular area of increased density in the right lung, overlying the third rib anteriorly. Based upon the study of these films the diagnosis of malignant disease of the right chest with metastases to the lumbar spine was made. The shadow in the right lung was rather sharply outlined, of rounded contour and appeared some distance away from the hilum. The prostate was examined and was found normal and, no other evidence of a primary tumor being found, the con-

dition was classed as a primary carcinoma of the right lung.

After his admission he continued to complain about pain in the left hip. He had a persistent cough, practically without expectoration. The patient made little of that symptom himself, called it a "cigarette-cough." He had no symptoms of gastro-intestinal disease. On admission he appeared distinctly cachectic; this appeared in keeping with the pulmonary lesion. His general condition became rapidly worse, especially so since January 1. He was bright, communicative and co-operative until then, but about that time became quite irrational. He was held under opiates most of the time and he expired January 7.

The autopsy was held January 7, 1933. Without going into all of the detail I will give a summary of the findings.

The lungs were not adherent and there was no excess of free fluid in the pleuric cavities. The main area of tumor-tissue was found in the location indicated by the X-ray films near the base of the right upper lobe. It is of roughly spherical outline, about the size of a large chestnut. On the cut-surface the tissue is firm, partly of a grayish-white color and partly darker, flecked with deposits of anthracotic pigment. Two bronchi pass close to the area. These could be followed in their course and the tumor originated apparently not from them, as far as could be seen grossly. Rather close to the mass of the main-tumor and nearer to the hilum of the lung an enlarged anthracotic parabronchial lymphnode was seen. On the cut surface this appeared extensively infiltrated with tumor-tissue. It was about the size of a cherry. Several smaller paratracheal lymphnodes higher up were also found to contain tumor-metastases. Areas of bronchopneumonic infiltration were scattered through both lower lobes. Small and firm shotty nodules were felt rather widely scattered below the pleuric surfaces as well as within the lung-tissue itself. These also showed tumor-infiltration microscopically. Grossly on account of their small size and lack of color distinction they could easily be overlooked. In the left side of the chest the sixth rib showed a fusiform swelling near its posterior angle. The bone was here extensively destroyed, the rib could be cut with the knife, it was thoroughly infiltrated with tumor-tissue. A similar condition obtains also in the 2. and 3. left ribs, from where the tumor-tissue could also be traced subpleurally into the tissues of the chest-wall.



The abdomen showed no excess of free peritoneal fluid. Fat-tissue very atrophic. Ileum- and jejunum-coils almost empty, not inflated; they occupy only a small space. The stomach (Dem. of slide 19) shows on its anterior surface in the region of the fundus an area of subserous tumor-infiltration, about one inch below the cardia. The stomach wall appears here infiltrated and is about  $\frac{3}{4}$  cm. thick. This area, upon opening the viscus, is seen to correspond to a large ulcerated neoplasm, evidently a carcinoma, of circular outline, in diameter about 6 cm., surrounded by a thickened craterous wall of neoplastic tissue, the center of the lesion broken down and showing a floor of necrotic tissue. The remainder of the stomach and the duodenal mucosa show no further lesions. The mucosa of the jejunum and the ileum shows nothing remarkable except at one spot in the ileum, about five feet upward from the ileo-cecal junction. Here the serosa opposite the mesenteric attachment shows a firm grayish-white tumor-infiltration covering an area of ovoid outline, the long diameter of the oval running transverse to the axis of the intestine. This area measures 2 by  $1\frac{1}{4}$  cm. Upon opening this part of the ileum it was seen that a superficially ulcerated area with slightly raised edges corresponds to the outline of the lesion. The mesenteries show a number of small lymphatic metastases. One larger one was removed from the mesentery of the upper jejunum. Microscopically it was found to be crowded with carcinoma-tissue. A number of smaller tumor-infiltrated lymphnodes were seen along the course of the abdominal aorta and about the pancreas. The third lumbar vertebra was involved and on the left side its transverse process was destroyed. There was extensive bone-resorption and the body of that vertebra could be cut with the knife. Gall-bladder and biliary passages were found free and patent. The liver is not enlarged. Upon its superior and inferior surfaces both in the right and left lobe several small metastases were seen. These were, however, strictly limited to the surface of the organ and none were found within the deeper liver-tissue. Along the lumbar vertebra which was found the seat of metastatic tumor the substance of the left psoas-muscle was found riddled with extensive tumor-metastases. The colonic mucosa showed a number of small diverticula, partially filled with inspissated feces. Otherwise no gross lesions were seen in the colon and none in the

rectum. The bladder showed nothing of note; the prostate was grossly and microscopically normal. The kidneys are of small size and show their structure well outlined grossly. The left kidney differs from the right in the presence of a number of small tumor-deposits, all in the periphery of the cortex and assuming the form of small multiple tumor-infarcts. Only one, a very small one, was seen in the right kidney. The pancreas shows grossly nothing of note. Clinically, also, intracranial metastases were suspected, but the cranial cavity was not explored. (Dem. of slides 20-33.)

This case presents some interesting features. Firstly: It was diagnosed clinically as another case of primary pulmonary carcinoma, and secondly, from the point of clinical history. The chief complaint centered in low back-pain and pain in the left knee. That is why the patient was first sent in for X-ray examination by the orthopedic surgeon and also was examined urologically. As far as pulmonary symptoms are concerned, there were not many. The patient had a dry, hacking cough, but he paid not much attention to that. When asked about it, after the X-ray of the chest was taken, he half laughed it off, thinking it rather insignificant—"a cigarette-cough," he said. Another remarkable feature is that a cancer of the stomach could exist and reach the size as found at autopsy, without any gastric symptoms marked enough to call attention to that particular lesion. It is true, his anorexia and cachectic habitus would have caused this possibility to be investigated, but the neoplasm in the chest being known, in the X-ray film, so closely portraying that of a primary lesion and also the lumbar discomfort readily referable to the spinal metastasis,—these symptoms called really for no further explanation. Another peculiar feature of our second case is that all the metastases in the liver were of nearly uniform size. All of them were small, probably of nearly the same age and apparently of more recent origin. They were widely scattered and were all found strictly upon the surface of the organ situated just below Glisson's capsule. Serial sections through the liver-tissue itself showed none at all in the interior of the organ. The picture, hence, was quite different from that often seen in stomach-cancer, where the liver throughout its substance is riddled with large and small nodular metastases, and it raises the question whether these superficial liver-metastases originated not so much by invasion of the portal venous circulation as perhaps rather suddenly by way of the hepatic artery. A tumor

embolus, then, passing peripherally through the main arterial current, could have been split up, some of it going through the celiac axis into the hepatic artery, causing the superficial, widely scattered peripheral liver-metastases; again, some of it entering one of the mesenteric arteries may have carried the metastatic tumor-matrix into the wall of the ileum, which we pointed out grossly and microscopically as the seat of a metastasis, and lastly, some of it entering into one or both of the renal arteries could have set up the metastases in the cortex of the kidneys.

We were fortunate to visualize the invasion of a gastric vein by the tumor in one of our sections directly, and, considering that the primary cancer in the stomach was located quite close to the cardia and, also, that there are notoriously anastomoses between the gastric veins in that location and the oesophageal veins, which drain off into the azygos vein, we can say that tumor-material leaving the stomach lesion via the gastric veins could very well have reached the right lung on the bloodway more directly and earlier than that would have happened by way of the thoracic duct, and set up a metastasis in that organ at a comparatively early date. We also saw in one of our slides the invasion of a small pulmonary arterial vessel by the tumor-tissue. The same thing, probably, happened to pulmonary veins and from there, of course, the systemic arterial circulation is open to any invasion, as was pointed out before. Unfortunately, the cranial cavity could not be explored. We might have found metastases there, too, judging by the clinical windup of the case. Aside of that, metastases occurred on the lymphway freely, as evidenced by many tumor-invaded mesenteric, retroperitoneal and mediastinal lymphnodes. That the pulmonary metastasis appeared rather large and formed a well outlined tumor in itself may be due to the fact that it occurred rather early, so that it could grow into a tumor so closely simulating a primary carcinoma of the right lung radiologically.

And, that the cancer of the stomach was not more outspoken in its local symptoms, that is likely due to its location high in the fundus along the anterior wall, thus approaching the so called silent area of stomach-carcinoma. Notably cancers located in the fundus near the greater curvature may exist for a long time without marked symptoms.

## GAS BACILLUS INFECTION — A REPORT OF TWO CASES\*

By JONAH FIELDMAN, M.D.†

CHARLES V. CHAPIN HOSPITAL, PROVIDENCE, R. I.

Gas gangrene, although of rare occurrence in civil life, does occur with sufficient frequency to merit discussion. Because of its relative frequency as a complicating factor of wounds received during the late war, the disease has received an increasing amount of attention.

The condition was first described by Maisonneuve in 1853 under the name of gangrene foudroyante. It has been variously labelled—gas gangrene, acute mortification, war gangrene, fulminating gangrene, emphysematous gangrene, and traumatic spreading gangrene.

It is difficult to obtain reliable figures concerning the incidence of this disease, but data compiled during the World War indicate that 1 to 3% of infected wounds presented the picture of gas gangrene. Statistics show that weather has an effect upon its occurrence, having been observed more frequently during the cold and wet months. Butler reported two cases of gas infection of the abdominal wall in 7,000 laparotomies. Weintrop and Meseloff made a study of 85 cases of gas gangrene occurring at the Bellevue Hospital and found that it occurred once in every 7,310 cases.

The disease is caused by a variety of anaerobes, the chief offender being the bacillus aerogenes capsulatus, also called the bacillus Welchii. The organisms found associated with the latter are: (1) the vibron septique, (2) bacillus oedematiens and (3) bacillus sporogenes. These are all capable of breaking down carbohydrates and protein with the production of hydrogen and carbon dioxide. The bacillus sporogene produces the sulfide gas which gives to this condition the characteristic putrid odor. Many workers who have studied this condition argue that the organism has no effect on living tissue, i.e., there must co-exist certain attending factors. Some of these are: (1) a defective blood supply to the injured area and (2) death of the tissue either by direct trauma—the actual severance of the blood supply or thrombosis of the vessels to the part. Among other causes may be included inefficient splinting with injury to the blood supply.

\*From the Surgical Service of the Brockton Hospital.

†Fieldman—Interne at the Surgical Service of the Brockton Hospital.



constriction of the limb by the use of tourniquets and the damming back of discharges by tightly packing the wound. \*It would seem then that there are essentially three factors necessary to produce this disease: (1) trauma with a breach in the integrity of the skin, (2) contamination with material in which the offending anaerobes live, such as earth, soil, fecal matter, manure, etc., and (3) death of tissue. All seem to agree upon the fact that the death of the tissue is a necessary antecedent to the spread of the disease. By far the greatest percentage of cases are seen in extensive and deep lacerations of muscle tissue and in compound fractures of the long bones.

The pathology can readily be observed in the diseased muscle by the usual staining methods with eosin and hematoxylin. It consists essentially of a liquefaction and coagulation necrosis of muscle. Grossly, it is readily noted that the tissue is "dead." One is unable to identify individual muscle bundles which now are almost black in color and jelly-like in consistency. A thin greenish pus permeates the diseased tissues and is probably due to a superimposed infection with pyogenic organisms. The latter being aerobic (streptococci and staphylococci), add to the severity of the disease by utilizing the available oxygen.

Microscopically the diseased muscle fibre stains uniformly with eosin and one is unable to identify the individual fibrils. The former are swollen and separated from the interstitial connective tissue. Later on, the sarcolemmal nuclei undergo pyknosis, karyolysis and finally, do not take the stain at all. In transverse section, the organisms can be found far beyond the edge of the gangrenous area.

The organism which is almost always found by direct smear is a gram positive rod with rounded or sometimes square-cut ends. Spores are usually absent in the tissues but are often found in the culture. They are enclosed in a transparent capsule. Growth is rapid at 37° C., and in the usual culture media containing certain sugars (nutrient agar with dextrose) there is produced much gas. Cultures are made in accordance with any of the anaerobic methods. There is some question as to whether or not a specific exotoxin is produced by the organism.

All suspicious wounds and lacerations with definite injury of tissue especially muscle and all compound fractures particularly those of the long

bones, should be watched and examined for gas bacillus infection. In the ordinary "clean" case the patient is treated, returned to the ward, and when seen the next day, presents the facies of a comparatively comfortable individual. However, in such cases, with a superimposed gas infection, acute constitutional symptoms with a local production of gas may be present within a few hours following the injury. A patient left in good condition may be found in extremis in a few hours. The early symptoms are pain in the affected part, a feeling of malaise and restlessness, a rise in temperature with an increase in the pulse rate. Vomiting may be an early symptom and later on may become particularly persistent and disturbing. One of the earliest physical signs is swelling of the affected limb; locally, the skin is pale, tense and cold. The area immediately around the wound is crepitant. This may be heard by placing the stethoscope over the affected part. Later on, the overlying skin becomes discolored and mottled with purple patches which is indicative of interference with the blood supply and death of the underlying muscle. Finally, the skin takes on a greenish yellow hue. The diagnosis can readily be made by observing the above mentioned symptoms and may be confirmed by examination of the direct smear or by the demonstration of gas in the stab culture. A positive blood culture is rarely present and can only be seen very late in the disease.

CASE 1. M. V. is that of a white Italian male, age 47. The patient was admitted through the accident floor following a fall. A diagnosis of a compound supracondylar fracture of the right humerus was apparent. There was a history of contamination with the soil. The patient was given the usual emergency care and a temporary splint was applied. Within 24 hours there was a marked rise in temperature, from 98° on admission to 102.4° within several hours. There was some swelling and tenderness of the right upper arm. The temperature fluctuated from 100° to 102°. The patient continued to run a temperature and appeared sick. Seven days following admission he was taken to the operating room where multiple incisions with drainage of the right arm were performed. A smear taken at this time revealed infection with the bacillus aerogenes capsulatus. A stab culture showed the production of gas. The above-mentioned objective findings were also present in typi-



cal form. On the following day, it was deemed wise to make further incisions both above and below the right elbow anteriorly and posteriorly. A polyvalent gas gangrene antitoxin was given daily as will be mentioned below. The incisions were made in the fascial planes and split by blunt dissection to avoid an undue amount of bleeding. No packs or drains were inserted. The wound was irrigated with hydrogen peroxide and chlorazane. No dressings were applied and the arm was placed on a clean sheet beneath a cradle from which was suspended an electric bulb. The patient continued to run a septic temperature and there were obvious signs of absorption. A blood culture was not done. It was apparent that if nothing was done to prevent absorption the patient would die either from a toxemia or a septicemia. Consequently a guillotine amputation was done twenty-two days following admission. The site of the operation was about twelve centimeters below the shoulder. The stump was left exposed to the air and covered as directed above by a cradle and drop lamp. The polyvalent antitoxin, of which 21 bottles were given, were discontinued at this time. Two days following the operation the temperature became essentially flat and the patient's condition became correspondingly more hopeful. Since then (up to the time of writing) the temperature has continued to be normal and patient is well on the road to recovery. The site of amputation appears healthy and is granulating in well over the bony stump. It should be remarked that tetanus antitoxin was given on admission.

CASE 2. G. J., age nine years, white, male, entered the accident room following an injury while riding on the back of his father's truck. There was a longitudinal laceration on the lateral aspect of the left lower leg with transverse section of the gastrocnemius and soleus muscles. Antitetanic serum was given. The wound was irrigated, debrided and an anatomical repair of the muscle was done. The skin was closed around rubber drains 28 hours after admission it was noticed that the injured member had become discolored, painful and swollen. The sutures were removed and a smear taken and stained by the gram method showed the gas bacillus. An anaerobic culture made from the same material showed the production of gas. It was apparent at this time that the patient was very sick, showing signs of profound toxemia. With the pa-

tient under nitrous oxide and oxygen anaesthesia, the leg was opened up, the muscle bellies split by blunt dissection and the necrotic tissue was removed. A full therapeutic dose of a polyvalent gangrene antitoxin was given with no apparent improvement. The patient was in extremis and amputation was considered as the only possible life-saving measure. However, this was not done because it was not possible to obtain the consent of the parents. The patient rapidly failed and died within 72 hours after the injury. This case is an interesting one from beginning to end; the extensive character of an injury to an extremity, a sudden rise in temperature to 103°, a toxic and delirious patient. The local signs were of the text-book variety—the tense discolored, cold limb, the necrotic jelly-like muscle tissue, a foul smelling seropurulent discharge and crepitus which extended both above and below the immediate site of injury. The treatment is interesting in that it closely follows that which we now understand about the pathogenicity and habits of the causative factors; and may be outlined as follows:

- (1) Prophylactic
- (2) Curative
  - (a) the early case
  - (b) the late case

Although preventive procedures have not been universally adopted, there are those who strongly believe that prophylaxis holds a worth while place in the treatment of this disease. All suspicious injuries should be watched with the thought in mind that one is dealing with a possible gas infection. During the late war, anti-gas gangrene serum was used routinely by the French Medical Service in the care of severe lacerations and compound fractures where there was the remotest possibility of contamination. Davidson, writing in the *Georgia Medical Association Journal on Anaerobic Wound Infection*, states, "that in all severely lacerated wounds and compound fractures, particularly where there is soil contamination, a prophylactic dose of a combined polyvalent anaerobic serum should be given within the first 24 hours." Antitetanic serum should be given if it has not already been administered. Patients who are admitted to a hospital with such potentially dangerous wounds should be placed on a four-hour chart and the dressings used should be such that they may be easily removed for frequent examination of the

injured area. It is generally agreed that serum cannot replace surgery; but its use may make radical surgery unnecessary and also help to lower the mortality.

When an active case of gas infection has already been discovered, the treatment will depend on the probable duration of the disease. As in all other cases in which surgery is indicated the age, sex, social and economic status of the patient may influence the decision of the attending surgeon. All things being equal, if one is fortunate enough to discover the disease in its early hours, the combined use of conservative surgery with serum is the treatment of choice. By conservative surgery is meant the following procedures: free incisions to open the wound as thoroughly as possible, excision of all devitalized tissue, careful removal of all foreign bodies, particularly clothing and blood clots, control of all bleeding points and adequate drainage. These are all important steps in the surgical treatment. The incisions should be numerous and wide enough so that drainage or packing will not be necessary. Wherever it is possible, the muscle bellies should be split by blunt dissection so that bleeding may be minimized. The wound should not be covered with dressings and should be irrigated frequently with oxidizing solutions, for example, hydrogen peroxide or potassium permanganate. The Carrel-Dakin technique, using continuous irrigations with chlorine preparations, has proven its value during the World War. A cradle from which is suspended a drop light may be placed over the affected member.

All these surgical procedures should be supplemented by the early use of adequate doses of a polyvalent gas gangrene antitoxin. The extent of the involved area, the length of time that the injury has existed and the apparent degree of intoxication, all must be taken into consideration in deciding on the dosage of serum to be used.

When it becomes apparent that conservative surgery and serum are unable to check the infection, radical steps should be immediately instituted. If the diagnosis is made late in the disease or if the patient presents symptoms of toxemia, amputation should be considered as the only life-saving measure. The guillotine amputation is the operation of choice; and the site of election should be carefully considered by the attending surgeon, keeping in mind that the infected area is surrounded by falsely

apparent healthy tissue. Following the operation, it is only necessary to control the bleeding points and if one places a cradle and drop lamp over the stump no dressings will be required. The application of oxidizing agents to the stump is of value. The guillotine operation supplemented by serum may save the life of an individual who otherwise might die.

*Conclusion:* It is the purpose of this report to discuss not only the academic aspect of gas bacillus infection with its symptoms and treatment, but to emphasize upon the active practitioner the acute fulminating character of this disease. Whereas the treatment of the acute surgical abdomen may sometimes be delayed for hours, the care of a wound infected by the bacillus aerogenes capsulatus must be immediate and thorough. It may be interesting to note that the methods of treatment which have already been outlined above were employed in the cases just cited; that Case 1, which was diagnosed late and where amputation was done, lived; that Case 2, which was diagnosed within the first 28 hours and where extensive conservative measures were instituted, died. Finally it may be suggested to those who are prone not to accept the preventive treatment with serum that once an affected case is diagnosed, subsequently suspicious cases should receive prophylactic doses of serum until such time as those who have already been admitted with gas infection have been discharged from the hospital.

From what has gone before, the following inferences may be drawn. In the treatment of this infection, radical surgery including amputation and the liberal use of polyvalent serum are the only dependable measures at hand. In the prevention of this disease the routine use of prophylactic serum should be advocated in all cases of suspicious wounds and in the pre-operative preparation of patients who are to be cared for in rooms situated near those in which gas infected patients have been present.

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FREDERICK N. BROWN, M.D., *Editor*  
309 Olney Street, Providence, R. I.

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## EDITORIALS

### BASAL ANESTHETIC

The hypnotic drugs, when administered in overdose, will produce a condition of surgical anesthesia, with unconsciousness, muscular relaxation and diminution in reflex excitability, but it has been conclusively shown that this procedure is impracticable as endangering the life of the patient. Large doses of the barbiturates cause a depression of the respiration which may result in serious pulmonary

complications. Tri-brom-ethanol has a similar effect and in addition the theoretical possibility of fatty degeneration of the liver and kidneys, although in some cases of death following the use of this agent the autopsy has shown no demonstrable lesion. In his "Progress of Anesthesia in 1930," Woodbridge stated: "The phrase 'basal anesthesia' used to indicate so deep a state of narcosis produced by preliminary medication that the amount of inhalation anesthetic required to produce surgical anesthesia is greatly reduced and the patient is unaware of its administration, seems to be ill-suited, for the condition is commonly one of moderately deep narco-



sis with or without light anesthesia." Not all American writers are as careful as Woodbridge. German writers have conscientiously avoided the word "anesthetic," as applied to hypnotic agents. In the English abstracts of their papers, the German "narkose" has often been translated "anesthesia." The word "anesthetic," as applied to hypnotic agents, is incorrect. The hypnotics are neither basal nor any other kind of anesthetics. The use of the term "basal anesthetic" is specially dangerous in this country, where the administration of anesthetics is so often entrusted to the ignorant and unskilled. It leads to the impression that administration of an overdose of a hypnotic drug is a safe method of producing surgical anesthesia. In proving the falsity of this idea, the lives of some patients have been sacrificed and others may follow.

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#### HOW TO RECOGNIZE QUALIFIED SPECIALISTS

The recent creation of the Advisory Board of Medical Specialties by the American Medical Association is a broad, comprehensive and commendable step in the sponsorship of the various examining boards for certification in their respective specialties.

There are in existence and already functioning efficiently several of these examining boards, who certify specialists whose qualifications by both investigation and examination reach a high standard of merit. Their pioneer work is of vast importance not only to the profession but to the public whom the physician serves, for it places the seal of approval and qualification upon the real specialist and eliminates the "Mushroom Specialist," the "General Specialist" and the "Specialist by self announcement."

The next issue of the Directory of the American Medical Association will indicate and list as specialists only those who are diplomates of their respective boards, and it is planned to issue shortly a Specialist Directory listing only qualified diplomates.

Already through the proper medical channels the public is being advised of this great undertaking which is to benefit them by accurate information as to who is and who is not a true specialist, and statements as to the significance of examining board certificates.

To quote from a recent editorial in the Journal of the American Medical Association: "As information concerning the work of these boards becomes more widely disseminated among both the medical profession and the public, their prestige must grow. Eventually the young man who wishes to make for himself a place in any of these specialties will consider the securing of a certificate by a council-recognized certifying board as the first step in such a procedure. Hospitals will also do well to be guided in their staff appointments by similar qualifications.

"Movements of this type necessarily develop and advance slowly. However, with the qualifications and restrictions that have been outlined there is reason to believe that the certifying boards will do much to advance the quality of specialistic service available to the people and the profession of our country."

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#### LOOK!

Spring is in the air, in fact, is here and going by, and with it comes the thought of golf. With that thought in mind the Providence Medical Society has voted to hold an Annual Handicap Golf Tournament for its members. Its committee has already been appointed and is at work. The date fixed for the tournament is June 13th and will be held at one of the local clubs. There will be refreshments and a good time will be had by all.

Further announcement of this outing will appear in the daily papers or information can be obtained from Dr. Leone at the Rhode Island Hospital. It is the hope of the committee that a large turnout will take advantage of this opportunity. If this is a success, there is likelihood of a later tournament with the lawyers or some nearby State Medical Society.

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#### A CONSIDERATION OF SOME DISEASES OF THE JAWS\*

##### *Osteomyelitis*

By CHARLES J. SMITH, D.M.D.

146 WESTMINSTER STREET, PROVIDENCE, R. I.

The dento-alveolar abscess or the so-called abscessed tooth with its associated swelling presents very little difficulty in diagnosis, for the individual so afflicted readily points out the tooth that feels "pushed out of its socket" and most tender to

percussion. The removal of the tooth under such circumstances usually does not establish adequate drainage, for although the tooth was the primary cause the infection has found its way into the bone and through to the periosteum. Often times the periosteum is perforated and it is at such a point drainage should be established by incision.

The removal of a tooth ordinarily, however, is not followed by any alarming symptoms or disturbances in the general condition of the patient. There are times even, when the individual expresses surprise that he did not have more or less pain. And, on the other hand, there are those who cannot understand why there should be any disturbance whatsoever resulting from the extraction of a tooth.

This should be considered. When a tooth is removed there remains an open wound to a depth of one-half inch or more into the bone, soft tissue attachments have been lacerated and the wound is immediately contaminated by the saliva. Dependent upon the virulence of the germs present and the resistance of the tissues determines the reactions experienced. There also enters into the picture the difficulty of the operation and the traumatizing of the tissues.

The type of anaesthetic used in the removal of teeth in all probability has little to do with the post-operative tissue reactions. Some have been led to believe that disturbing tissue reactions are more frequent after the use of the local anaesthetic, novocaine, than when a general anaesthetic is used. It is granted there is more criticism heard as regards the reaction following the local anaesthetic in comparison to the general anaesthetic, but the number of injections made of the local anaesthetic is sufficient evidence as to why such criticism is heard. In Rhode Island, with a registration of about 415 dentists, a fair estimate would be that daily in the State 1,500 injections of novocaine are made and 150 administrations of nitrous-oxide and oxygen given.

The removal of any tooth may result in an osteomyelitis.

This condition rarely becomes alarming in the upper jaw, but results in considerable destruction in the lower jaw. The reason in all probability for this difference is due to the difference in the struc-

ture of the two bones. In the upper jaw we find for the most part cancellous bone which is easily penetrated by infection and reaching an outer surface, readily drains. In the mandible, however, we have a very dense bone with thick cortical plates which offer resistance to quick drainage. It is the confinement of a suppurative inflammation within this slowly yielding structure that results in the radiating and excruciating pain complained of by the individual, and an extensive destruction of bone. There is a sudden chill and a varying temperature from sub-normal to 103°. The pain is deep-seated and there is marked tenderness over the affected area, much swelling occurs and trismus develops because of the involvement of the muscles of mastication. At the onset the X-ray picture will be negative and it is only when destroyed areas occur in the bone that a definite diagnosis of osteomyelitis may be made. In the early stages we can only suspect an osteomyelitis.

The frequent use of the roentgenogram will guide us in the course of the disease. As soon as there is definite congestion or pus formation, adequate drainage should be established. This acute type of osteomyelitis of the mandible very frequently follows the removal of a tooth during the acute stage of infection.

An extensive osteomyelitis may be the cause of a pathological fracture, and the operator, therefore, should carefully check the progress of the infection by the use of roentgenograms.

A pathological fracture may not be averted, but it most surely should be anticipated. A splint should be designed and inserted in such a way so that the parts may be held in their normal positions. A pathological fracture of the mandible, unless splinted, will result in a greater destruction of tissue. As in osteomyelitis in other bones of the body, when sequestra form they should be removed.

There is another type of osteomyelitis to which I would draw your attention and that is one described by Garré as sclerosing osteomyelitis. In this type there is high fever, much pain, involvement of the soft tissues, and not associated with pus formation in a majority of cases. Under palliative treatment, rest and a bone forming diet, the infiltration of the soft tissues subsides, fever falls, recovery gradually occurs and there remains but a thickening of the bone. Garré came to the conclusion that in this type of osteomyelitis sequestration takes place but gradually is absorbed.

\*Read before the Providence Medical Association, April 2d, 1934. Lantern slides of radiographs, drawings and sketches were shown to demonstrate operative measures and procedures.

Blair's analysis of 39 cases of osteomyelitis reports 33 associated with peridental infection and of the 33, 31 were operated during an acute stage.

Infection spreads very rapidly by means of the mandibular canal which may be a reason for the occurrence of the disease more diffuse in the mandible than in the maxilla.

Many cases develop from ten days to two weeks after an extraction usually when there has been considerable trauma. Trauma is the fuse that lights up an infection. The extraction of a troublesome tooth in close proximity to a devitalized tooth may result in the flaring up of a latent infection about that tooth.

Sequestral formation may be very minute or sliver-like or may be quite extensive involving a considerable part of the bone.

### *Cysts and Tumors*

The most prevalently found cyst in the bones of the jaws are the radicular or root cyst and the dentigerous cyst. These cysts are being found more frequently now because of the universal use of the X-ray for dental diagnostic purposes. Because, in their earlier stages they give rise to no pain or discomfort and therefore in the past, that is before X-ray, they were not found until there was a pronounced swelling and disturbances of contour.

Cysts and tumors of the jaw may arise at the site of an old peridental inflammation. These and many other forms of chronic irritation acting in conjunction with an inherent predisposition of the tissue toward neoplastic growth constitute the important etiologic factors in the great majority of cases. It does seem that heredity plays a role in the incidence of these growths for the clinical experience is that with some individuals prolonged irritation of identical clinical character does not result in the development of tumors.

The dental cyst radiographically appears as an evenly circumscribed area in the body of the bone, radiolucent to the X-rays and showing a white periphery which upon operation proves to be a thin formation of dense bone. The cavity itself is filled either with a clear amber fluid or pus. One or more teeth may be involved. The cystic lining must be entirely removed at operation for the tendency to recurrence is great. After the removal, the question then arises what to do with the cavity.

In the upper jaw where the cavity extends distally and separated from the Antrum of Highmore

only by the lining of the sinus or a thin wall of bone the cystic cavity and the sinus cavity may be made one cavity, a fairly large window made in the nasal-antral wall for drainage and the oral incision tightly sutured.

When the cystic cavity runs straight back from an anterior tooth underneath the floor of the nose, the nasal cavity and the cystic cavity are made one and the oral opening immediately sutured.

In the lower jaw the entire buccal plate in the region of the cystic cavity is removed down to the lower border of the mandible, the wound immediately sutured and then a constant pressure bandage applied to keep the buccal mucoperiosteal flap in contact with the inner surface of the lingual wall of the mandible.

The removal of the cystic membrane is not as a rule a very difficult operative procedure but a very important part of the operation. Our greatest concern is the elimination of the cavity. Its immediate elimination is most desirous for the large spaces filling up with a blood clot very easily become infected and a slow tedious series of irrigations and treatments result.

It is an accepted theory that the benign giant cell tumors of the long bones is closely associated with the resorption of bone or calcified cartilage. There is a relationship to osteogenesis via cartilage.

The records of the surgical pathological laboratory at Johns Hopkins Hospital covering a period of 35 years show only twenty two cases of giant cell tumor of bone occurring in the head. Two of these were in the temporal fossa, 6 in the upper jaw and 14 in the lower.

Analyzing these records we find that not a single giant cell tumor was found in either the frontal or parietal bones, thus coinciding the theory that tumors of this type are found only in precartilaginous bones. The maxilla like the frontal and parietal bones is a membranous formed bone, but the mandible in certain parts has cartilaginous areas of ossification, namely, at the symphysis where Meckel's cartilage participates in bone formation and also the coronoid and condyloid processes with extension downward in the ramus. So we do occasionally find the giant cell tumor in the mandible.

Most generally the cyst of dental origin can readily be diagnosed from the X-ray picture because of its evenly and definitely circumscribed area and the appearance also of a definite membranous lining. The area is evenly radiolucent. The multilocular



cyst or cystic adamantinoma however, shows an irregular bony circumference and a grouping of smaller cysts in one part of another.

The solid adamantinoma also shows an irregular bony circumference from which arise bony projections extending towards the center and differentiating it from the single dental cyst.

There are numerous growths occurring in the mouth which although may not be truly classified as neoplastic are really hypertrophies of both the hard and soft tissues. There are the bony growths in the median line of the palate varying in size from that of a small pea to that of an English walnut or larger. These are benign growths giving rise to no pain or discomfort until the time comes when plates are to be made. Very often it is necessary to remove these growths in whole or in part.

The continued use of an artificial denture which has become loose or ill fitting gives rise to the development of extensive soft tissue hypertrophies. These hypertrophies may progress steadily and at times assume considerable dimensions. Certain areas become ulcerated and there is possibility of malignancy. Kazanjian of Boston has devised a technique for operation on these particular hypertrophies which leaves the mouth in exceptionally good condition for new and well stabilized plates. Other common growths are the epulides;—the fibrous epulis, and the giant cell epulis. They occur more frequently during the early years and are somewhat more common among women than men.

Certain local causes may be recognized, such as, persistent peridental irritation and infection ragged edges of carious teeth, irritating bands and roots. These growths are usually situated between teeth and from which position they protrude as small pedunculated masses which progressively enlarge.

Epulides are fairly common and grow more rapidly during pregnancy.

The giant cell epulis is more common than the true fibroma. It is usually soft and is of a deep red or purple color and bleeds easily. They are evidently of periosteal origin.

Metastatic tumors of the jaw are rare. Carcinomata may have their origin in the breast or some remote part of the body and the jaw may be involved in connection with a general carcinomatosis. Primary carcinoma of the jaw, however, have been reported.

Whereas, the exostoses, soft tissue hypertrophies cysts of the jaws occur in mouths of good or poor sanitary conditions, it is significant that cancerous lesions are found most generally where conditions are mostly insanitary.

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Mead: Oral Surgery.

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### LINGUAL THYROID\*

By LEWIS B. PORTER, M.D.

199 THAYER STREET, PROVIDENCE, R. I.

The incidence of lingual thyroid places it among the rare anomalies of development and has great interest attached to it because of the large proportion of cases in which it is the sole source of thyroid tissue.

Cattel and Hoover,<sup>1</sup> reported for the Lahey Clinic in 1929, met with it in two cases in 7,600 thyroid operations. Grace & Weeks<sup>2</sup> collected only 130 cases in the literature. Ulrich<sup>3</sup> found two cases in 4,000 cases of thyroid diseases at the University of Pennsylvania. Dore<sup>4</sup> analyzes 81 cases of lingual thyroid and found myxoedema followed in seven after removal of the lingual thyroid, a ratio of 1-11. It is more common in women; a ratio of 8-1 has been found. A few cases have been found in the new-born.

About the fourth week of embryonic life there is seen in the  $2\frac{1}{2}$  mm. fetus evidence of the thyroid gland, first noticed as a median anlage in the floor of the pharynx. It is a diverticulum or pouch of entodermal cells which soon becomes solid and descends until the pretracheal region is reached. During its progress downward the lingual attachment is maintained so that a stalk or duct is formed, and later becomes atrophied. This is the thyroglossal duct and is in later life a source of cysts and fistulas. The upper end of the duct is marked by the foramen caecum seen as a depression at the end of the median raphe of the tongue. The progress of the thyroid downward may be arrested so that anomalous positions are formed at any point, the least frequent being the lingual. Lahey has made a classification in relation to their embryological development as follows: (1) those that remain and

---

\*Read before the Ophthalmological and Otological Society at the Peters House, Rhode Island Hospital, at the December meeting, 1933.

develop at the point of fetal origin, the foramen caecum, and are clinically known as lingual goiters; those that develop and remain localized in the structure of the tongue, called intralingual goiters; those developing in front of the larynx, the pre-laryngeal type; those that develop and assume the normal position anterior and lateral to the upper rings of the trachea, known as pretracheal; and those that develop in the superior mediastinum behind the sternum, commonly called retrosternal.

A theory has been advanced that the thyroid tissue sometimes arises from the post-bronchial bodies, or fifth pouches uniting with the lateral thyroid bodies, and better explains the origin of accessory thyroids and lateral ectopia; they often undergo malignancy. Though microscopically they look like thyroid tissue, they have not proven sufficient activity to present myxoedema after removal of the thyroid. The para thyroids develop from the third and fourth pharyngeal pouches on each side and are, therefore, not subject to malposition as the thyroid. The lingual thyroid is an adult gland undescended.

### *Symptoms*

Although lingual thyroid has been found at birth, symptoms are not usually discovered until puberty and even much later, at thirty-five approximately in the case I wish to report. Its presence may not have been known for years. The symptoms may be very insidious, becoming more troublesome as goiter develops. They are those of any benign growth at the base of the tongue, difficulty in swallowing and phonation.

The gland is seen with the tongue protruded or with a laryngeal mirror at the base of the tongue at the foramen caecum lying in the solcus in front of the epiglottis. It is firm, usually smooth, covered with mucous membrane with large veins coarsing through it; occasionally it is irregular in outline, more often it is not. There is usually a broad base, though I have read of one pedunculated. The mucosa is somewhat deeper red than the surrounding membrane.

When a tentative diagnosis is made, an effort should be made to determine the presence of other thyroid tissue. The isthmus and lateral lobes in the normal location are not always palpable, so one may be forced to operate with some uncertainty as to whether he is dealing with a true ectopia or an

accessory thyroid. An exploratory incision in the normal site has been recommended to determine the presence of thyroid tissue, which involves very little risk. This to me seems hardly necessary, for if the removal of the lingual growth is imperative one should be prepared to combat myxoedema. With a suture through the tip of the tongue and lateral lingual sutures anterior to the growth, a good working field is obtained. Anesthesia by tubes through the nose and to the trachea is best. Large gauze pads are then placed in the oro-pharynx. An incision of the mucous membrane at the base of the tumor is elevated, and a blunt dissection is done. Deep sutures and ligation control bleeding. The encapsulated growth is shelled out much as a tonsil. Ever so much more of the gland is found in the tongue than on its surface.

The case I wish to report is a woman of forty, unmarried, of French parentage, menstruated at fifteen years. She is four feet eight inches in height, and weighs somewhat less than one hundred pounds. For several years, six or seven, she has had food lodge in the throat which she would have to wash down with water or regurgitate. This condition has become more aggravated recently. Her voice has become somewhat nasal in quality and has had some severe hemorrhages from the throat during the past year. There has never been any pain.

About September 1933 she had a peritonsillar infection. In this examination her family physician discovered a large lingual growth. I found it to be attached at the foramen caecum hemispherical and symmetrical in shape, three by two by one and one-half cm. at the base, with large veins in the mucosa. No pretracheal thyroid could be palpated, all tracheal rings could be counted. A portion of the growth felt less firm, so I inserted a needle and withdrew a thick, reddish yellow fluid, suggesting cystic degeneration.

Inasmuch as she was getting along tolerably well, it seemed prudent not to interfere with it at present as deglutition and respiration are not too troublesome.

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REPORT OF THE MILK COMMISSION  
OF THE  
PROVIDENCE MEDICAL ASSOCIATION  
REUBEN C. BATES, M.D., *Secretary*

Certified Milk in Providence during 1933 was obtained from the following farms: Cocumcussoc Farm, Wickford, R. I.; Cherry Hill Farm, North Beverly, Mass.; Fair Oaks Farm, Lincoln, R. I.; Hampshire Hills Farm, Wilton, N. H.; Walker-Gordon Farm, Charles River, Mass.

Through the courtesy and co-operation of the Boston Commission we have accepted their certification of two farms from Massachusetts and one from New Hampshire.

Bacteriological and chemical examinations of the milk are made in the laboratories of Brown University under the supervision of Prof. Charles Stuart. Monthly visits are made to the local farms, and Dr. Harris Moak of New York has inspected these farms twice during the year.

A co-operative campaign has been carried out in an effort to acquaint the medical and dental profession concerning Vitamin-D Milk. This consisted of a series of letters and pamphlets which has been sent to all members of the Association and to the dentists in the vicinity. Full page advertisements have been inserted in the R. I. MEDICAL JOURNAL during the year.

Monthly Averages of Certified Milk

	COCUMCUSSOC			CHERRY HILL			FAIROAKS			HAMPSHIRE HILLS (Past.)			WALKER-GORDON		
	B.F.	T.S.	Bacteria per C.C.	B.F.	T.S.	Bacteria per C.C.	B.F.	T.S.	Bacteria per C.C.	B.F.	T.S.	Bacteria per C.C.	B.F.	T.S.	Bacteria per C.C.
Jan.....	4.82	14.16	2,581	4.82	14.32	1,350	4.72	14.06	3,050	.....	.....	.....	4.12	13.01	2,222
Feb.....	4.40	13.63	3,306	4.72	14.16	1,900	4.55	13.97	2,477	3.95	12.95	.....	4.17	12.98	2,150
March.....	4.35	13.52	2,605	4.70	14.07	2,400	4.57	14.48	2,022	4.42	12.89	50	4.10	12.93	1,587
April.....	4.60	13.79	2,175	4.45	13.74	650	4.97	14.23	2,518	3.85	12.80	50	4.10	12.88	3,312
May.....	4.72	13.99	2,300	4.22	13.41	887	4.80	14.19	2,856	3.87	18.81	.....	4.05	12.88	1,650
June.....	5.58	13.66	2,583	4.14	13.45	810	4.54	13.87	2,658	3.94	12.95	883	3.98	12.78	2,490
July.....	4.50	13.85	3,433	4.30	13.72	1,355	4.40	13.63	5,383	3.92	13.27	1,442	4.14	13.00	5,250
August.....	4.35	13.90	3,457	4.25	13.50	1,398	4.28	13.41	2,157	3.90	12.60	10	4.05	13.01	6,800
Sept.....	4.56	13.80	4,611	4.32	13.57	1,275	4.57	13.71	2,372	3.88	12.78	.....	4.10	12.65	3,986
Oct.....	4.56	14.34	3,062	4.40	13.47	2,412	4.46	13.53	2,666	4.07	12.91	.....	4.02	12.66	4,425
Nov.....	4.39	13.46	14,466	4.34	13.32	2,060	4.33	13.82	1,805	4.17	13.18	.....	4.08	12.83	4,580
Dec.....	4.26	13.26	28,790	4.40	13.34	2,566	4.38	13.58	2,766	4.21	13.19	200	4.15	12.89	4,200
Yearly Aver.	4.59	13.78	6,114	4.42	13.67	1,588	4.54	13.87	3,561	4.02	13.48	221	4.08	12.87	3,554

Averages (all farms) for the year: B. Fat—4.33; T. Solids—13.53; Bacteria—3,007

The personnel of the Commission includes Drs. William P. Buffum, A. Roland Newsam, Harold G. Calder, Harmon P. B. Jordan and Reuben C. Bates, Secretary and Treasurer.

SOCIETIES

BOOK REVIEWS

PAWTUCKET DISTRICT SOCIETY

April 19, 1934.

The annual meeting and banquet of the Pawtucket Medical Association was held at the Biltmore Hotel, Providence, R. I., on March 15, 1934.

The following officers were elected for the year 1934-35: President, Dr. H. J. Hanly; Vice-President, Dr. W. Dufresne; Secretary, Dr. Thad. A. Krolicki; Treasurer, Dr. B. U. Richards; Councillor, Dr. Chas. Hold; Delegates—Dr. E. Mathewson, Dr. S. Sprague, Dr. C. L. Farrell; Library Committee—Dr. E. Mathewson, Dr. G. Howe, Dr. B. Marshall.

Respectfully submitted,  
THAD. A. KROLICKI, M.D.,  
*Secretary*

THE HISTORY AND EPIDEMIOLOGY OF SYPHILIS,  
William Allen Pusey, A.M., M.D., LL.D.  
Charles C. Thomas, publisher. Price, \$2.00.

The first and second chapters deal with the history of syphilis and the development of our knowledge of the disease. The last chapter is a discussion of the epidemiology of syphilis.

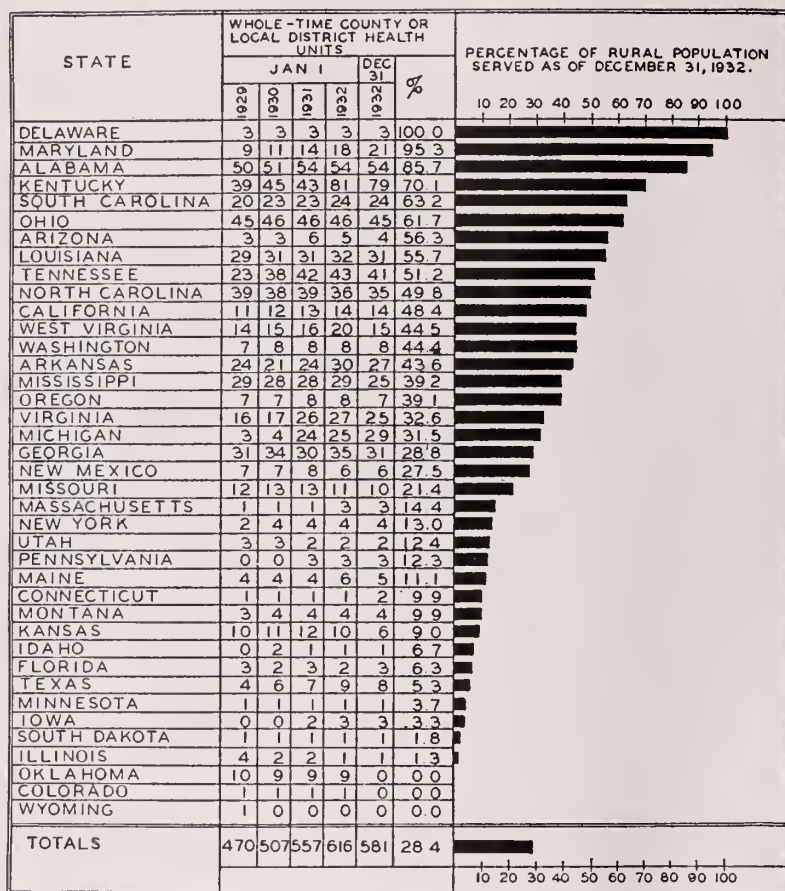
The book is interesting, particularly the lectures on the history of syphilis and on its epidemiology. It also contains pictures of many men who played an important part in the development of our knowledge of the disease, such as Hutchinson, Schaudinn, Wasserman and others.



## COUNTY HEALTH UNITS

By MALFORD W. THEWLIS, M.D.,

WAKEFIELD, R. I.



A careful glance at the accompanying chart, taken from *Public Health Reports*, will reveal states which have full-time county or local district health units.

Of the 581 counties, townships or districts, 551 or 94.8 per cent were receiving financial assistance for the support of their health service from one or more of the following agencies: the State Board of Health, the United States Public Health Service, the Rockefeller Foundation, the American Red Cross, the American Women's Hospital Fund, the Rosenwald Fund, the Commonwealth Fund and the Millbank Fund.

*71.6 per cent of our rural population is as yet not provided with the form of health organization which is best adapted for rural areas.*

Delaware has a hundred per cent rating, as will be seen from the chart; Massachusetts, 14.4%; Maryland, 95%. Rhode Island has a zero rating. The only other states having zero ratings are Colorado, Indiana, Nebraska, Nevada, New Hampshire, New Jersey, Oklahoma, Wisconsin and Wyoming.

Rhode Island has a rural population of about 62,000. There is great need for a county health unit as operated in other states.

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## Annual Number

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# Loose Stools in Infants

require extra diapering, and inconvenience the mother

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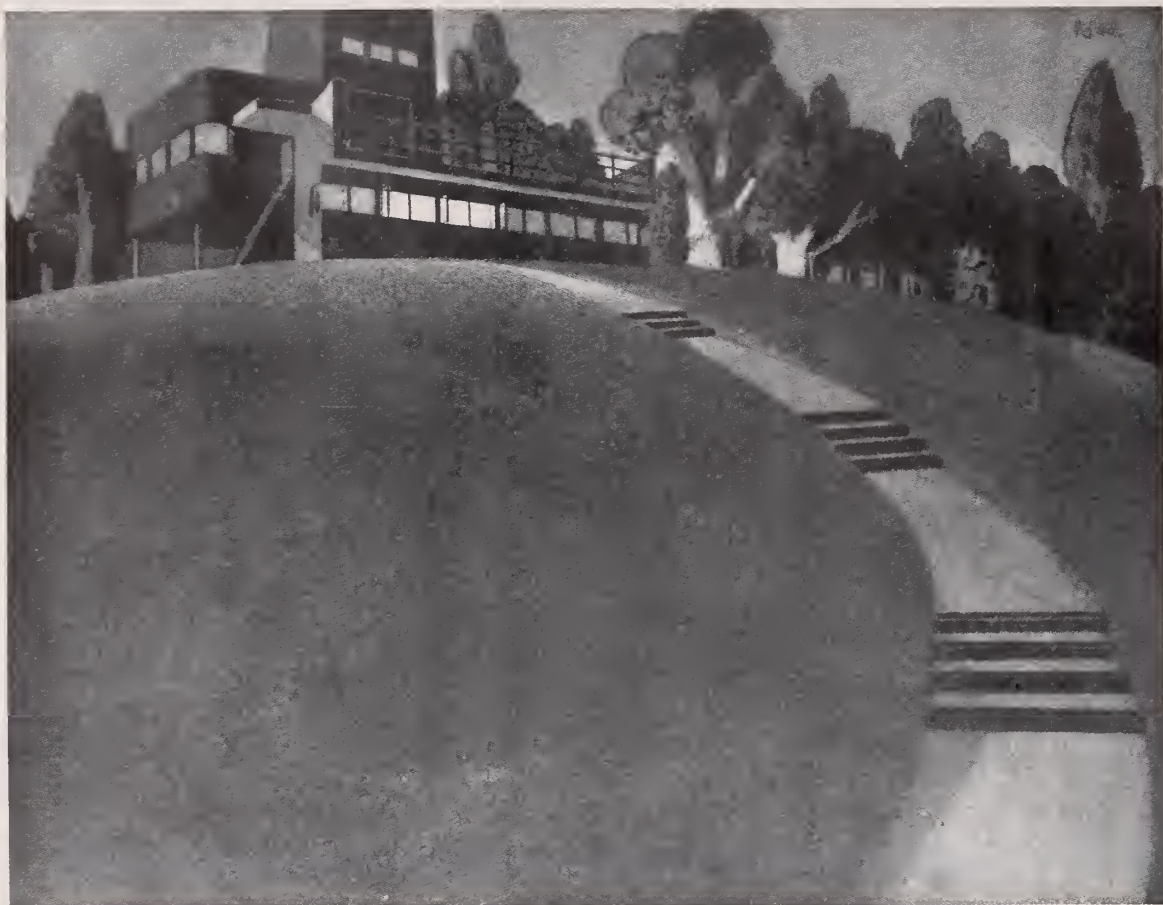
Moreover, when the condition is superimposed by chance infection, the delicate balance may be seriously upset, since the infant's reserves have already been drawn upon, so that resistance to infection and dangerous forms of diarrhea may be too low for safety. Every physician dreads diarrhea, which Holt and McIntosh call "the commonest ailment of infants in the summer months."

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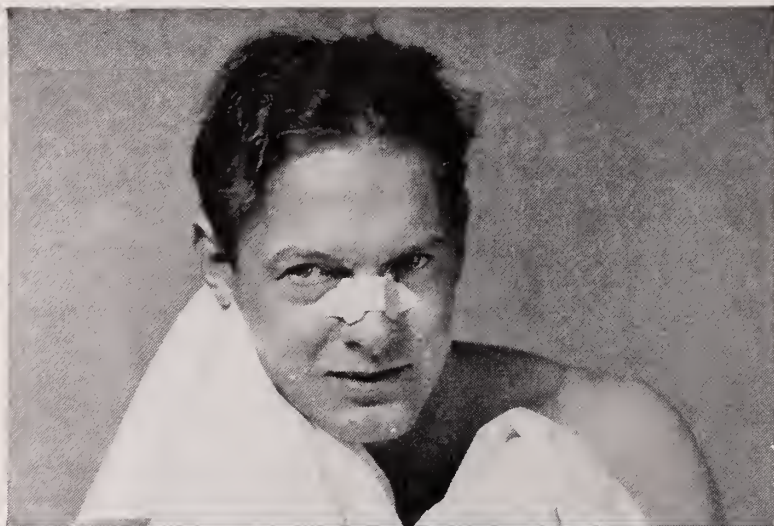
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## ORIGINAL ARTICLES

### THE PRESENT CRISIS IN MEDICINE\*

*Address by the Retiring President of the  
Rhode Island Medical Society,*

CHARLES S. CHRISTIE,  
WEST WARWICK, R. I.

Your selection of me to serve as your president is an honor of which I am not unmindful. It has been deeply appreciated and will be a memory to cherish so long as I may be permitted to dwell in your midst. The office of president of our Society is one which carries many responsibilities, and is pregnant with possibilities. I feel that perhaps my tenure of office has not been an era of original production. We have gone on after the same general scheme which has been pursued for nearly a century and a quarter. We have been actuated by much the same stimuli to which our predecessors were subjected, viz: self-preservation and the advancement of scientific medicine.

My text for this afternoon is found in Article 2 of the Constitution and By-Laws of the American Medical Association, under which we, as fellows of the Rhode Island Medical Society, automatically function. For purposes of brevity, I shall quote the first paragraph only. "The object of this Association shall be to promote the science and art of medicine." What could be more comprehensive? I have pondered over this excerpt from our guidebook, trying to think of some exception that does not lend itself to this dictum and at the same time conform to the ethics of our profession, but so far, I have been unsuccessful in my search. If, after listening to my exposition of the matter, anyone is convinced that I have missed such, it will give me great pleasure to have my attention directed thereto. Pursuing this theme, the first duty of any group is efficient organization. This Society was formed in 1812, and has continued to function *sine intermissione ab initio*. It has numbered amongst its members practically all the distinguished physi-

cians who have ever practiced within our boundaries, which is a distinct tribute to the salutary influence of our organization.

About society membership, I should like to say that I feel quite sure that every eligible practitioner of medicine and physic needs the association and influences of a medical society, and the society in equal measure needs the membership of every reputable physician within its jurisdiction. All these should not only be members of the State Society but also of their District Society, which is a *sine qua non* for membership in the State organization, and once elected to membership to the latter, one becomes automatically eligible for membership in our National Society. Many men will be heard to say, "Of what avail is Medical Society membership to me? If I were a member it wouldn't be convenient for me to attend meetings," "I might lose an important case during absence from my practice," or "I should never get an opportunity to speak at any of the meetings," or "I would probably never be invited to present a paper." I will try to meet all these objections in, what seems to me, a logical way.

First: In these days of telephones, high powered motor cars and express highways, one is only about one hour removed from his office, even though it be located in the most remote fastness of our State. Furthermore, one might conceivably receive some hint of how better to care for his next case provided he spent a few hours in attendance at a good live medical meeting.

Second: Discussions are always welcomed, particularly if the speaker doesn't agree with all the essayist may have brought forth in his presentation of the subject under consideration.

Third: Your program committee is always delighted with offers to present cases and papers. We have been especially fortunate in that respect during my tenure of office, as with a few notable exceptions in case of men of eminence from outside our own membership, nearly all our contributions have been voluntary.

Hence, if at any time a member has a message to deliver, he may be assured of a hearty welcome on the part of those whose duty it is to arrange our

\*Delivered before the Rhode Island Medical Society June 7, 1934.

scientific programs. I wish to take occasion to thank and compliment all those who have so generously assisted your officers during the past year in providing for your entertainment and, we hope, your instruction. I feel justified in adding the latter, as the papers have been of an extremely high order of excellence and presented in a delightful manner. "Something is rotten in the State of Denmark" when we are unable to induce but little over 50% of the registered physicians within our commonwealth to affiliate themselves with the State Medical Society. Perhaps our district societies have not been sufficiently active, or perchance the officers have not provided the sort of program to attract the younger men, on whom we must depend for recruits. In my various contacts, it has been suggested that the component societies have no voice in the management of the affairs of the parent society. If that be so, it is due to neglect of the privileges of constituent societies, for it is distinctly stated in our By-Laws, that each district society, no matter what its size, is entitled to one councilor, and a delegate for each twenty members or major fraction thereof, and that these councilors are entitled to participate in all deliberations of the State Society Council, and the delegates have the same privileges in respect to the House of Delegates. If they have not done so, and as I happen to know they have not during the last three years, I fail to see wherein they have any basis for complaint regarding the conduct of the affairs of the State Society.

As to the ills of our medical profession, I have no panacea to offer. You will probably be surprised or mayhap shocked at this confession, in these days of alphabet medicine men, who go around with a remedy for every ill whether it be social, financial, mental or moral. However, it is not well to pursue a policy of *laissez faire*, and assume the attitude that "all's well that ends well." Even those who firmly believe in the efficacy of prayer are quite apt to see that their powder is dry when they go into battle. My personal feeling is that there are too many regulations that fail to regulate. We have sat supinely by too long, and let every sort of cult and form of quackery flourish, and allowed our prerogatives to be assumed by all sorts of organizations, a list of which is too long to enumerate and with which you are all too familiar. Don't misunderstand me, for nothing is further from my motives than an attempt to decry the splendid results which have been accomplished by various activities in the control and eradication of many

formerly ravaging diseases, but I do feel that the whole affair has been much overdone and that many workers, in their enthusiasm for reform and regulation, have lost sight of the basic purposes and principles of the organization with which they are affiliated. For instance, I am heartily in sympathy with the educational activities of the child-welfare organization as maintained by the State in instructing mothers as to the care of their offspring, but I fail to see how certain acts come within the purview of some of their representatives, who go about regulating diets and in some cases suggesting certain proprietary foods and referring patients to specialists. These matters are not hearsay, but have occurred to my own personal knowledge. You will agree that advice of that nature had best be left to the physician in charge, even though he be but a criticized and buffeted general practitioner.

Another point I should like to bring up is, that perhaps a more intimate contact between specialists and family physician should be cultivated. From years in contact with many specialists, some of them of great eminence, and with general practitioners of wide experience, I feel that the average general practitioner is fairly alert and quick to realize when he is confronted with some unusual or serious case and that he has no purpose or design to assume the entire burden of responsibility, but is ready and anxious to accept counsel and guidance. He can usually be trusted to call the one best fitted to cope with the particular condition at issue. In that way there is more likelihood of efficient co-operation, which always redounds to the benefit of the patient, and our first consideration is always the welfare of the patient. No matter how eminent the specialist or how humble the family physician, the latter is in position to know something about the patient, which may be of extreme importance in arriving at a correct diagnosis, and which might take hours of the invaluable time of the specialist to discover, and which even, despite his diagnostic acumen, he may never discover. I am not one who believes we are over-supplied with specialists. I believe we are in need of more rather than less, and I also believe that their training should be more intensive and that each should confine himself strictly to his specialty. I don't believe that the internist should attempt to turn his hand to surgery, no matter how minor it may be, neither do I think the surgeon should attempt to treat diabetes, although this condition may have been discovered in a patient who has been referred for an operation for acute ap-



pendicitis. Personally, it has been my experience to find the specialist always ready and willing to give the best of his talents and time, in an honest endeavor to be an ever-present aid when we are in doubt or troubled by some puzzling case. I have also found him in a receptive mood on those rare occasions, when I have had something worth while to offer. I do feel, however, that more satisfactory results would accrue to the trio, consisting of specialist, patient and family physician, if the specialist made it a rule never to examine a patient except he be referred by a general man or some other specialist. It has seemed to me that there has been too much jealousy in our ranks, and far too little appreciation of the good qualities of our colleagues. No one ever succeeded in building for himself a reputation by attempting to tear down that of his associates, whether they be intimate or remote. I need not add that one should refuse to consult with quacks and cultists, as that is made very plain under the code of ethics which governs our activities and to which we all subscribed when we became members of this Society.

"If quackery, individual or gregarious, is ever to be eradicated, or even abated, in civilized society, it must be done by enlightening the public mind in regard to the true powers of medicine." These words were written by Dr. Jacob Bigelow, that eminent surgeon who first properly described the ligament which bears his name, and who also devised a scientific method of reduction by manipulation of dislocation of the hip, which supplanted the barbarous procedure of reduction by traction as applied by means of the windlass. Since reading these words of the late Dr. Bigelow, I am fully convinced that if we would but heed his advice many of our problems of encroachment by the irregulars would solve themselves. Before throwing stones of criticism, we should be quite sure we are not living in glass houses of inefficiency.

Almost without exception, our patients come to us for relief from some real or fancied incapacity, and it is a sad commentary on our lack of observation and keenness of vision that a very large percentage of them leave us eventually, dissatisfied and disappointed. While we are much imbued, and rightly so, with the spirit of scientific enthusiasm, we must not forget the most important point at issue, viz: the patient himself. It is extremely important that we should never lose sight of the fact that the patient who is in our consultation room, be he the most prominent or the most obscure in-

dividual in Christendom, is, from his point of view the most important patient amongst our clientele, and we should let him know that we feel so just as strongly as he does. We should never seem hurried or inattentive in the presence of any patient, but give each one adequate time so that when we have finished, he realizes that we have a fair conception of his complaint. If after careful and repeated examination, we are unable to arrive at a diagnosis which accounts for all signs and symptoms presented, we should not hesitate to so inform the patient, and refer him to someone more experienced or capable of the use of diagnostic methods which are not at our command. By so doing we increase the patient's confidence in our judgment and probity, and probably retain him as a client and save him from being exploited by some quack. If the physician loses caste with his clientele, and they seek strange gods of healing in the form of all sorts of quacks and cultists, he has no one to blame but himself. In these days of easy communication and rapid dissemination of knowledge of all sorts, useful and otherwise, probably more of the latter, it is useless for us to expect to retain our clients unless we are prepared to pursue our clinical investigations beyond an inspection of the tongue and estimation of the pulse rate. We must equip ourselves with present-day knowledge and so be able to retain the loyalty of the patient to his physician. One does not need to be ultra-scientific and do or have done all the latest and most technical laboratory tests in order to arrive at a fairly accurate diagnosis. And that is the basis of successful medical practice. My chief objection to the cultist is, that he has never had or pretended to have training even in the preliminaries as we look upon them. The sooner that we come to a realizing sense of the fact that patients are seeking relief and relief only, if not by regular physicians then by quacks, the sooner shall we be enabled to eliminate the irregulars and charlatans.

I should like to say a word as to the relation between the hospital and general practitioner. I recently came across a statement by a staff member of a metropolitan hospital who said, in substance, that he was glad that a regulation had been adopted in that hospital which allowed the general practitioner or family physician to be left on the front steps of said hospital. In my opinion this attitude is indefensible, for, after all, it is usually the general practitioner who is responsible for referring most patients to any hospital. And as one of the func-

tions of a hospital is to train men for the better performance of their duties to their patients, it seems to me that this training should not cease when the interne bids farewell to the institution where he received his very important training in the science and art of medicine; but every endeavor should be made on the part of hospital authorities to continue that training by keeping contact with all physicians who refer patients, whether those physicians be staff members or not. There are several ways in which this relationship may be promoted. It can be done by the physician himself by sending along with the patient a résumé of his findings, together with a provisional diagnosis. To the younger colleagues, I might say this: be not hesitant to commit yourself in that way, for if your diagnosis is not confirmed, next time you will exercise greater care. It is by our mistakes that we learn if we but profit by them. The hospital, of course, should invite the doctor who refers a case to be present at any operation which may be performed. If it be a medical case, the referring physician should be invited to any conference which may be held, and pains should be taken to demonstrate to him what procedures are necessary to arrive at a correct diagnosis. By such means the quality of general practice will be raised and higher standards of efficiency will be set up, so that it will become a matter of some pride with the general man to have his diagnosis confirmed. For after all, most cases are capable of being diagnosed correctly in all essential details, if we but make use of the diagnostic means which are available to most of us. Very often it is also possible to eliminate many costly and time-consuming laboratory examinations, if we but take time to secure a complete and accurate history and do a thorough physical examination. As a result we are in a position to say, "This patient's symptoms are explained by such a pathological or psychical condition." If we are still in doubt, a few comparatively simple tests will likely solve the whole diagnostic problem.

As to further personal efficiency, I think we should lose no opportunity to add to our attainments as practitioners of medicine and physic. During the last five years especially, surely no one can plead that the pressure of professional duties has been too confining. Besides attending Medical Society meetings, I am quite sure that we have all had ample time to peruse three or four journals devoted to medicine and surgery. If we read these zealously and with understanding, we are quite sure to

know pretty nearly all that is being done in the world of medicine; and it doesn't require so much time either. I think it was Dr. Oliver Wendell Holmes who said, "If one will devote one hour per day to the reading of one particular subject over a period of five years, he will become a master of that subject." Almost every practitioner takes for himself some sort of vacation annually, either longer or shorter. How better can one spend his vacation, or a portion of it at least, than in visiting some well-known clinic, of which we have a profusion in our own country. Or, if one feels more ambitious and is sufficiently opulent, he may prefer to visit some of the European clinics, many of which are conducted especially to attract foreign, particularly American, visitors. If we all made it a point to conform to the ethics as enumerated above by the few humble suggestions I have given in respect to professional improvement, I feel quite sure it would be all the better for the regulars and all the worse for the cultists.

No presidential address during these days of depression and oppression would be complete without some reference to the cost of medical care. Of course you are all more or less familiar with the report of the Committee on the Costs of Medical Care; like most reports of similar commissions, it reminds one of a ferryboat; just alike at both ends, so that the onlooker never knows which way it is going. I only hope the captain does. The report of the majority is distinctly socialistic, and as such, is not acceptable to the American citizens of this "land of the free and home of the brave." But whether we are ready or not, something is going to be done. Already nearly everything else has been regulated, and probably our profession has escaped simply because the codists have been too busy to notice such an innocuous class as we have proven ourselves to be, politically. I received quite a shock recently, when I was informed by our licensing board that certain cultists were permitted by statute to do anything which the regular practitioner is permitted to do, with the single exception of writing prescriptions. He may buy and dispense medicines *ad libitum* and I hope at times *ad nauseam*. Perhaps this privilege explains why some regular practitioners consider it quite ethical and proper to consult with such. As an example take the eye-glass fitters who have practically pre-empted the function of refraction. When they are confronted with some serious condition they are glad to seek protection at the hands of a competent oculist. I am not



sure whether they use drugs or not. My ophthalmological friends will pardon this reference, but after all they have endured from the optometrist, I am quite sure they will permit me so much. For a consideration of the many other abuses which have crept in and served to take from the legitimate practitioner his just sources of bread and butter, I would refer you to the report of the Committee on Public Health Clinics, which was so ably presented at the last meeting of the Council. When it is realized that over 40% of the money expended in the care and treatment of the ill goes to quacks and patent medicine vendors, I feel that perhaps some of our concern and sympathy for suffering humanity is possibly wasted, or at least misdirected. If this amount could be directed into proper channels and people could be taught that they need not necessarily have the most expensive room in the most exclusive hospital, some of our problems would be solved. Sometimes I think that many people feel a certain amount of social ostracism unless they can assert that they have the most expensive treatment obtainable. There is an abundance of excellent professional material lying around loose these days, and spoiling for something to do. Much as we oldsters may feel the competition, we have to admit that, with few exceptions, the youngsters fresh from internship are pretty competent chaps, and that they will make no glaring mistakes. They are entitled to recognition, and are usually willing to work for a modest fee.

In respect to hospitals, I am informed in an article written by Dr. Freehof of Chicago, that there are 7000 hospitals in the United States and that during recent years one-third of their beds have remained empty. Yet there are certain parts of the country that are without hospital facilities. It would be an invaluable plan that could remedy such a state of affairs. One source of added expense is duplication of equipment and personnel, both lay and professional. Each hospital must have a high-salaried executive, trustees (not that they cost much), heads of various laboratories, and above all, an expensive, oftentimes ornate building to maintain, perhaps provided by some generous donor who probably forgot at the time that such a building is expensive to maintain and who for that reason failed to properly endow it; thereby adding to the burden of the corporation which is already bow-legged and hunch-backed in attempting to carry a load for which it was never intended. I believe the medical staff should have somewhat

more of a voice in the management of institutions which could never exist without the services they give so freely. Members of the upper staff should have entrée to all of the trustees' meetings except that at which staff elections take place. At least 20% of the personnel of each board of trustees should consist of medical men, probably not members of the active staff, but preferably those who are retired on account of age limit, a rule which is operative in most hospitals. The nursing situation demands notice en passant. Undeniably, there is a very tremendous over-production in this profession as in all other lines, but obviously we cannot dispose of them like some of our Western farm products. It seems proper to suggest that all training schools should charge a tuition fee to its prospective nurses, as I see no reason why they should not pay for their training as other professions are compelled to do. When it is realized that over two-thirds of the members of our profession are receiving less than \$2,500 per year in income, it cannot be said that we are very greatly overpaid. During the recent lean years, many of our colleagues have been put to it to meet their obligations; in numerous cases they have been obliged to draw on their meager savings of years, in order to satisfy the rent gatherer and tax collector.

In conclusion I have but a few recommendations to offer, and those are merely a summary of what has gone before:

1. Better understanding between patient and physician.

2. Education of the public in respect to matters medical, probably by properly regulated and presented radio talks, satisfactory articles on medical topics in lay papers and journals, medical talks before lay organizations. And to this end I would recommend the appointment of a Committee of this organization, the duty of said committee being to arrange programs and furnish speakers when requested. The District Societies should be contacted and impressed with the importance of participation in such a program.

3. District Societies should put on a membership campaign and not be content until every eligible physician within its jurisdiction is a member of his local medical organization, and further that he shall be inducted into the State Society.

4. And finally, as our Secretary has suggested and so ably supported with potent reasons, I would recommend the abolition of our quarterly meetings, and, in lieu thereof, have an annual meeting of two



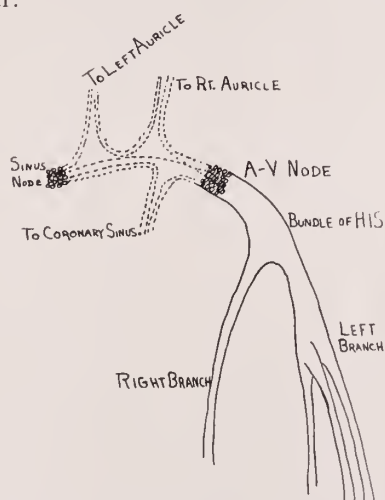
days' duration. This, I feel quite sure, would increase our membership and make more of a function and event of the whole affair.

In closing permit me to quote one of those rare gems from that greatest of all students of human nature, William Shakespeare, who puts the following words into the mouth of his character, Polonius: "To thine own self be true; and it must follow as the night the day that thou canst not be false to any man."

### COMPLETE HEART BLOCK IN YOUNG PEOPLE\*

By CLIFTON B. LEECH, M.D.  
211 ANGELL STREET, PROVIDENCE, R. I.

The phrase "complete heart block" carries a somewhat mysterious and rather dreadful implication. There is a bit of the dramatic in the thought that when the ventricles are deprived of the normal stimulus to contraction life itself is dependent upon the power of inherent rhythmicity which lies dormant in the auriculo-ventricular node and bundle of His. We may be reassured, however, by the comforting knowledge that nature's wise provision of a dual control, so to speak, usually results, when the stimuli from the sinus node are blocked, in an assumption by the auriculo-ventricular bundle of the role of pacemaker. When this happens the ventricular rate is slow, usually from 30 to 50 beats per minute, but often higher, especially in young patients. The ventricular rhythm is usually quite regular.



Schematic Drawing of the Entire Conductive Apparatus of the  
Heart  
(Modified after Kunz and Mobitz)

Permanently slow pulse was described incidentally by Morgagni<sup>1</sup> in 1773, and by Spens<sup>2</sup> in 1792. In 1827 Adams<sup>3</sup> noted its coincidence with attacks of loss of consciousness and epileptiform convulsions. In 1846 Stokes<sup>4</sup> noted that with the bradycardia all parts of the heart did not seem to beat in the same rhythm. It was thought that the bradycardia was due to an effect of the vagus nerve until in 1904 Handford<sup>5</sup> reported a case of Adams-Stokes syndrome associated with changes in the connecting bundle of His due to a gumma. From then to now there have been many instances of complete heart block reported, almost always accompanied by lesions in the interventricular septum with changes in the auriculo-ventricular bundle. A few cases have been reported in which no lesion of the bundle or septum was found at autopsy. In this connection Dr. P. D. White<sup>6</sup> states that it is important in the post-mortem study of the heart of a patient with auriculo-ventricular block to examine the coronary vessels supplying the junctional tissues for narrowing or occlusion. In 1908<sup>7</sup> there was reported an instance of slowing of the heart during gonorrhea in a young subject; at autopsy the artery of the septum was found to be plugged by a mass of gonococci.

Temporary auriculo-ventricular block is caused by toxic or functional conditions such as excessive vagal stimulation, digitalis poisoning, other vegetable or mineral poisons, asphyxia, uraemia, and the effects of infectious diseases such as rheumatic fever and diphtheria. Although permanent block is usually caused by lesions in the septum, there may, on the other hand, be considerable disease and damage in the auriculo-ventricular bundle and node without heart block because a small amount of tissue may be able to carry on normal function.

Permanent complete heart block occurs about twice as often in the male sex as in females, and about 90% of the instances occur after the age of 50 years. According to P. D. White the cause of this is the greater prevalence of coronary disease in males and in old age.

When we think of complete heart block we are apt to think also of the Adams-Stokes syndrome, although actually it takes place but seldom, and is very rare in young patients. The syndrome is due to cerebral anaemia resulting from cessation of the ventricular beats during a period from 2 to 30 sec-

\*Read before the Rhode Island Medical Society, June 1st, 1933.

onds. Many patients have no symptoms and remain unaware of their heart block for years. Symptoms, when present, are usually due to associated conditions such as coronary artery disease and myocardial insufficiency.

**Etiology:** According to P. D. White<sup>6</sup> permanent complete heart block is the result most frequently of coronary disease. He says "other less common causes of permanent and organic block are syphilis acting directly by infection of the bundle of His or more often by pressure from adjacent gummata, destructive lesions following diphtheria in rare cases, the results of rheumatic inflammation infrequently, invasion of the junctional tissue by the vegetative lesions of bacterial endocarditis, and very rare causes like pressure from neoplasms and cysts, miliary tuberculosis, and trauma. Finally it may be of congenital origin in rare cases, associated with interventricular septal defects and abnormal course or development of the junctional tissues."

Sir Thomas Lewis<sup>8</sup> in his very new book says that the lesions producing complete heart block are mostly inflammatory. That commonly the inflammation is rheumatic but that in later life the degenerative processes are more responsible. He states that the lesions that produce heart block are not often confined to the bundle.

The physiologist Wiggers<sup>9</sup> states that the lesions which produce block by involving the bundle are not, as a rule, confined to it but are distributed throughout the myocardium. Vaquez<sup>10</sup> states that the lesion is usually fibrous or is fibrocalcareous, next in frequency comes the syphilitic lesions while congenital lesions he places among the rare causes. He also records 2 patients who died of rheumatism and showed, at autopsy, lesions of the bundle.

**Diagnosis:** The diagnosis of complete heart block is to be seriously considered whenever the ventricular rate (pulse rate) is below 50 consistently and when exercise fails to cause a rise of more than a few beats per minute. Whenever the pulse rate is constantly below 40 one is almost surely dealing with complete dissociation between auricles and ventricles. The trained observer can often detect in the jugular venous pulse completely blocked auricular waves within longer ventricular pauses. Auscultation, in complete heart block, sometimes reveals faint sounds of auricular contractions which may come just before the normal first heart sound or at any period of the cycle. When the auricular contraction coincides with ventricular contraction there

is an accentuation of the first or second sound in comparison to its immediate predecessors.

The blood pressure is usually unaffected by complete heart block except when the ventricular rate is very slow, in which case the increased filling of the ventricles during their long diastole tends to cause a moderate elevation of the systolic level. This increased filling tends to keep the minute volume of blood flow nearly up to normal, which accounts for the lack of respiratory distress which patients with complete heart block exhibit when at rest. Since their ventricles cannot, as a rule, increase the rate or the minute volume very much these patients do have dyspnea on exertion.

Fluoroscopic examination makes it possible to observe the independent auricular and ventricular contractions.

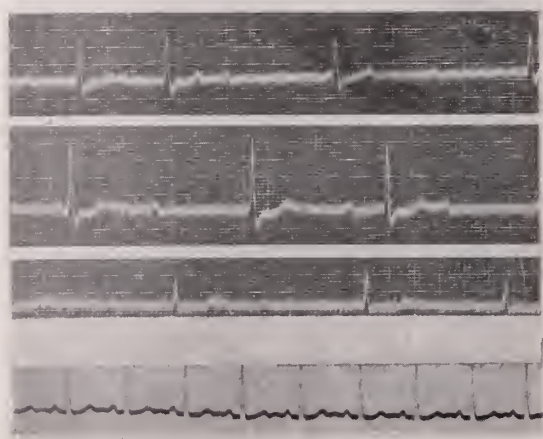
The diagnosis can be made with absolute certainty only by phlebograms or electrocardiograms. Atropine is administered to the patient in order to paralyze the vagus nerve and rule out excessive vagal effect as a cause of the block. In complete heart block, however, the vagus usually exerts little or no influence on the idioventricular rhythm but retains its control of the auricles, while the ventricles are chiefly under the influence of the sympathetic nerves.

The following cases are reported because of the youth of the patients and on account of the etiology.

Case I. A single woman of 21 years entered a hospital in February, 1930, with pneumonia of the left lower lobe of the lung. She had been sick for two days. On the day after admission with a body temperature 104° and a pulse rate of 100 she was given 120 minims of tincture of digitalis. A similar amount was given the patient on each of the next four days, a total of 600 minims in 5 days. The pulse rate dropped to 64. Thirty minims were administered during the next two days when the pulse rate dropped to 48 and an electrocardiogram was obtained which showed an auricular rate of 74, with a ventricular rate of 42. The uneven spacing of the ventricular complexes suggests that there is an occasional ventricular response to an impulse of supra-ventricular origin but the block is of a very high grade, probably complete. The total amount of digitalis administered, 630 minims of tincture, is equal, if of standard strength, to 4.2 grammes of the powdered leaf. This amount is approximately 3 times that required to obtain the full pharmacological effect desirable by digitalis therapy. The day



the electrocardiogram was obtained crisis occurred. Twelve days later the patient was discharged from the hospital with a pulse rate of 78. No other electrocardiograms were made until in April of this year I obtained the normal record shown below.



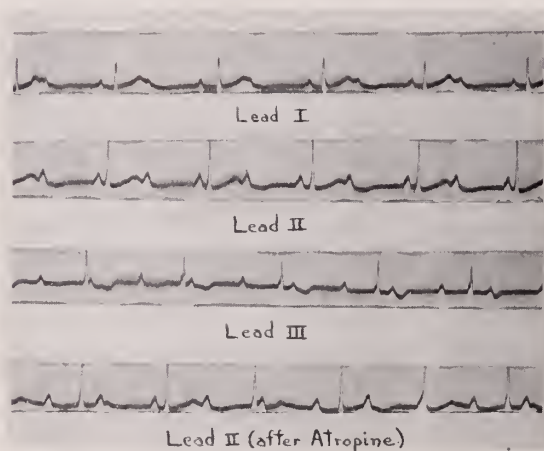
CASE I

Auricular rate 74, ventricular rate 42. Below is a strip from a normal record obtained 3 years after the former electrocardiogram.

Diagnosis: Temporary heart block, probably complete, due to digitalis.

Case II. A boy of 15 was sent to the out-patient department of the Rhode Island Hospital in June, 1929, by a school nurse because of a slow pulse. He had no complaints. The past history is devoid of infectious disease, rheumatic or otherwise. At the age of 10 years he was operated upon in the Rhode Island Hospital for congenital hypospadias. At that time his heart was recorded as normal although his pulse chart reveals a rate which varied from 40 to 86. No electrocardiogram was obtained. In 1929, while attending the out-patient department, an electrocardiogram revealed the presence of a complete heart block. Since that time he has been under the care of the cardiac clinic. He has no complaints other than moderate breathlessness upon exertion. Physical examination reveals no abnormality other than a faint systolic murmur at the apical region of the heart, a pulse rate of 48 which increases a few beats by exercise, and an occasional accentuation of the first heart sound. A recent electrocardiogram shows complete auriculo-ventricular dissociation, auricular rate 90, ventricular rate 46. The almost absolute regularity of the ventricular action is striking. At first glance this might appear to be a 2 to 1 block, with ventricular response to each

second impulse of auricular origin, but it is clearly evident in lead III that there is complete A-V dissociation. Incidentally, the coincident recording of the waves indicating auricular and ventricular activity explains the occasional accentuation of the first heart sound. After atropine the complete dissociation persists although the ventricular rate is slightly increased. The teleoroentgenogram is not abnormal. The absence of history of disease of infectious or inflammatory nature, the absence of other signs of acquired heart disease, the slow pulse rate at the age of 10 years, and presence of the congenital hypospadias cause me to feel that the heart block in this boy is probably of congenital origin. His lack of symptoms of heart disease led to no study of the slow pulse. It is possible that at an earlier age his ventricular response to exercise and to other stimuli was greater than it is at present. In this connection I published, in 1930, a report of an instance of undoubted congenital complete heart block in a child of 11 years which had escaped recognition in a large hospital because of a marked increase in the pulse rate after exercise, and at times spontaneously.



CASE II

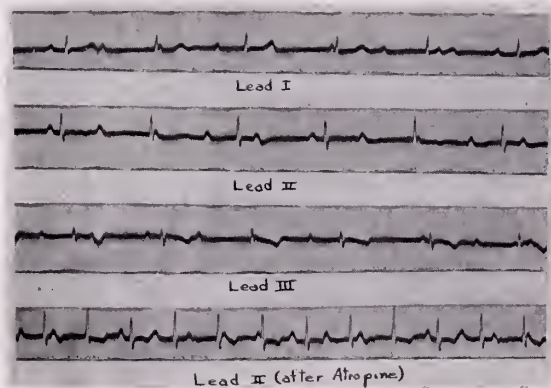
Auricular rate 90, ventricular rate 46. At first glance this might be a 2 to 1 heart block, but the complete auriculo-ventricular dissociation is obvious in Lead III. The complete dissociation persists after the vagus nerve is paralyzed by atropine.

Case III. In March, 1933, a married woman of 25 years was referred to me by Dr. William P. Bernard of Central Falls for investigation of a slow pulse. The only complaint was breathlessness on slight exertion which had been present all her life but was somewhat more pronounced recently. There is no history of rheumatism or other infec-



tious disease except more or less frequent tonsillitis of mild to moderate severity, and of measles at the age of 5 years. The patient's mother stated that the first physical examination of the child was made at the onset of the measles and that the attending physician called her attention to the remarkably slow pulse of the child, and that it had been slow ever since. At the age of 22 years the patient bore a healthy child, without apparent ill effects to herself.

The physical examination revealed a blowing, systolic murmur of moderate intensity over all the precordium with maximum loudness in the 3rd and 4th interspaces near the left sternal border. The heart sounds were interesting in that every now and then beats sounded much more loud than the others and occasionally there were suggestions of extrasystoles. The electrocardiogram reveals complete auriculo-ventricular dissociation, auricular rate 86, ventricular rate 50. As in the previous case the coincidence and near coincidence of auricular and ventricular activity explains the variations in the heart sounds. The ventricular action is absolutely regular. After atropine (1/20 gr.) the complete dissociation persists but there is marked increase in both the ventricular and auricular rate. This is thought to be due to the paralysis of the vagal fibers in the auricle and in the area adjacent to the focus giving rise to the idioventricular rhythm and possibly to neutralization of the parasympathetic effect that results from the individual's vagotony.



CASE III

Auricular rate 86, ventricular rate 50. It may be noted that the P-P intervals which contain a ventricular complex are slightly shorter than those which do not include a ventricular complex. The complete dissociation between auricles and ventricles persists after the vagus nerve is paralyzed by atropine but there is an unusual increase in ventricular as well as auricular rate (see text).

The teleoroentgenogram shows, according to the measurements used as criteria by Reid and Levene of Boston, enlargement of both ventricles.

The known slow pulse at the age of 5 years, the absence of pre-cardiac disease, and the presence of a murmur which is often due to a defect in the interventricular septum cause me to think that this is an instance of congenital heart disease with interventricular septal defect and complete heart block.

The fact that three young people came to my attention with permanent complete heart block which escaped detection for years led me to an inquiry as to the number of such patients which are recognized by pediatricians and cardiologists. Inquiry was also made concerning the etiology of such cases, particularly in view of the fact that while we see innumerable patients with severe rheumatic heart disease, yet permanent complete heart block among them is a rare occurrence.

Dr. Paul W. Emerson of the Children's Hospital in Boston stated, "We have had approximately three children who have had complete heart block, all of which we thought were congenital, and we have not seen complete heart block, presumably rheumatic in origin, in patients who exhibited no other signs of heart disease."

Dr. John Lovett Morse of Boston recalled but one case of heart block in a child, and that due, he thought, to typhoid fever.

Dr. William D. Reid of Boston did "not recall a single case of complete heart block presumably of rheumatic origin in which there was no other evidence of cardiac involvement." He has seen one instance due to diphtheria.

Dr. Paul D. White of Boston stated, "Certainly permanent rheumatic heart block is very rare, and I don't think we have ever had proved complete heart block of that origin. We have had five (instances of complete heart block) under the age of 35. Among these we thought the etiology was unknown in three cases, probably congenital in two."

Dr. Samuel A. Levine of Boston reported three instances of complete heart block due to diphtheria in childhood, another in a boy of 10 which came on with "either a rheumatic pneumonia or an ordinary pneumonia," two cases in children which he felt certain were congenital, and another in an adult who was known to have had the block at the age of

(Continued on page 118)



ALBERT HEIRCY MILLER, M.D.  
PROVIDENCE, R. I.

*President of the  
Rhode Island Medical Society*

✓

# THE RHODE ISLAND MEDICAL JOURNAL

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FREDERICK N. BROWN, M.D., *Editor*  
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## RHODE ISLAND MEDICAL SOCIETY

Meets the first Thursday in September, December, March and June

ALBERT H. MILLER	<i>President</i>	Providence
ROLAND HAMMOND	<i>1st Vice-President</i>	Providence
JOHN E. DONLEY	<i>2nd Vice-President</i>	Providence
J. W. LEECH	<i>Secretary</i>	Providence
J. E. MOWRY	<i>Treasurer</i>	Providence

### DISTRICT SOCIETIES

#### KENT

Meets the second Thursday in each month

DR. JOHN A. MACK	<i>President</i>	West Warwick
DR. L. J. SMITH	<i>Secretary</i>	Buttonwoods

#### NEWPORT

Meets the second Thursday in each month

JOHN RIDLON	<i>President</i>	Newport
ALFRED TARTAGLINO	<i>Secretary</i>	Newport

R. I. Ophthalmological and Otological Society—2d Thursday—October, December, February, April and Annual at call of President.  
Dr. Robert C. O'Neil, President; Dr. N. A. Bolotow, Secretary.

The R. I. Medico-Legal Society—Last Thursday—January, April, June and October, Archibald C. Matteson, President; Dr. Jacob S. Kelley, Secretary-Treasurer.

PAWTUCKET	
Meets the third Thursday in each month excepting July and August	
HENRY J. HANLEY	<i>President</i>
THAD A. KROLICKI	<i>Secretary</i>
	Pawtucket

PROVIDENCE	
Meets the first Monday in each month excepting July, August and September	
CHARLES F. GORMLY	<i>President</i>
P. P. CHASE	<i>Secretary</i>
	Providence

WASHINGTON	
Meets the second Wednesday in January, April, July and October	
E. E. KENYON	<i>President</i>
JOHN CHAMPLIN, JR.	<i>Secretary</i>
	Kingston
	Westerly

WOONSOCKET	
Meets the second Thursday in each month excepting July and August	
W. A. BERNARD	<i>President</i>
T. S. FLYNN	<i>Secretary</i>
	Woonsocket
	Woonsocket

## EDITORIALS

### TOBACCO

Announcement by the pharmacological laboratories of the University of Southern California of finding nicotine in breast milk revives the old controversy of the harmfulness of tobacco. There is no reason why the public and the medical profession are not entitled to all available information concerning the toxicity of nicotine, the pyridine bases and all other substances contained in tobacco. Be-

cause of the universality of its use it is of the greatest importance to know if the use of tobacco is harmful. As yet, although the use of alcohol has direct application to the issuance of life insurance, the use of tobacco has not been considered a bar, yet every physician of experience has known of cases where it would seem that the excessive use of tobacco had a direct bearing upon sudden death.

It has been said that tobacco agrees with no one and that although a tolerance is easily acquired the thought remains that there is harm in strong tobacco. Every busy physician has known of numerous cases in which the cessation of the use of



tobacco was followed by immediate and lasting benefit.

The discovery of nicotine in the breast milk is important. Children learn to use tobacco early nowadays, it would seem. And if there is any harm in it the sooner we find it out the better.

There is a large and rapidly growing literature upon the bearing of tobacco upon vascular disease. Many writers prohibit the weed in thrombo-angitis obliterans and allied diseases. The literature on the subject must be enormous. For many years there was a premium offered annually by the Chase Wiggin Fund under the auspices of the Rhode Island Medical Society for the best dissertation upon the evils of tobacco but of late years the offering has been discontinued because of the small number or total absence of contestants. It might be a good thing to revive interest in this important subject, bearing in mind the fact that symptoms of an irritant poison have been known to follow the use of tobacco in early youth and the fact that there are still those who believe that tobacco is very harmful.

---

### "HOW LONG, OH LORD, HOW LONG!"

That sage bit of advice to the young preacher that "no souls are saved after one half hour" might well be extended to include the scientific bumbles of the young medical man. It may well be added that it applies equally well to the old preacher and the old physician. Fortunately the average doctor does not indulge in public speaking to any great degree. There are, however, the medical meetings. These gatherings can and should be made of the greatest value to participants—but, we must sadly add, they can and should not be—yet all too often are—made veritable means of torture to the long suffering colleagues of the ambitious doctor who is bound to say it all at whatever cost to them. Recently we have seen well planned programs in our local medical gatherings utterly ruined by the indefensible prolongation of a scheduled twenty-minute address to a full hour—with the crowding of an eminent out of town speaker far into the night. Under such circumstances the guest must face an audience whose temper has been already ruined and in whom evidences of advanced fatigue are all too apparent. Such action is thoughtless and discourteous. It must in all fairness, however, be added that the guest speakers themselves have been, within our memory, even worse offenders than the local gentry on occasion.

There is also another phase to the matter. The utmost care in the planning of the meetings and warning of the speakers on the part of the presiding officer has been proved to be of no avail by our recent experiences. The JOURNAL respectfully calls the attention of these gentlemen to the fact that in most of these societies a "gag rule" exists, and that it is the duty of the presiding officer in every case to terminate the addresses on time and protect the audiences entrusted to his care. The JOURNAL also respectfully suggests that the presiding officers of our state and local medical societies have installed a system of warning lights or other signals, such as are used in most medical communities, and *use these devices*. In so doing they will merit and receive the hearty commendation of their confreres.

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### COMPLETE HEART BLOCK IN YOUNG PEOPLE

(Continued from page 115)

4 and "probably was congenital." His opinion is "that complete heart block is a very rare end-result of a previous rheumatic fever."

Dr. Henry E. Utter of Providence has seen two instances. The first was in a boy of  $2\frac{3}{4}$  years who had large tonsils and a loud systolic murmur at the apex of the heart: etiology undetermined. The second instance occurred in a boy of  $2\frac{1}{2}$  years following a chronic tonsillar infection. The block has persisted until the present time (about 12 years). Dr. Utter feels sure that the heart was normal previous to the infection.

In the records of the Rhode Island Hospital I have found 13 instances of complete heart block but no case of permanent complete block under the age of 35 years except the one reported in the present paper.

The prognosis in cases of permanent complete heart block depends to a good extent upon the presence or absence of additional cardiac disease. There is always the possibility of the Adams-Stokes syndrome and of sudden death, but the auriculo-ventricular dissociation itself is not inconsistent with long life.

The importance of recognition of this condition lies largely in avoidance of unnecessary treatment, in the accommodation of the patient to his capabilities, and in especial care to escape additional cardiac damage.

From this collective experience it seems justifiable to draw the following inferences:

1. Permanent complete heart block in young people is an uncommon but not very rare condition which sometimes is so devoid of symptoms as to escape detection for many years.
2. It is hardly justifiable to label permanent complete heart block as rheumatic in origin unless there is a clear history of rheumatic infection or unless there is additional evidence of rheumatic heart disease.
3. Permanent complete heart block in young persons is frequently of congenital origin (in 11 of the 22 cases mentioned in this paper the etiology was "probably congenital").

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## SOCIETIES

### THE RHODE ISLAND MEDICAL SOCIETY COUNCIL

The annual meeting of the Council of the Rhode Island Medical Society was held at 4:30 P. M., May 24, 1934, at the Medical Library, with the President, Dr. Chas. S. Christie, in the chair.

The minutes of the previous meeting having been published in the transactions of the Society, it was voted to dispense with their reading.

The annual report of the Treasurer as follows was presented by the Treasurer, and it was voted to accept same and to recommend its adoption to the House of Delegates.

It was voted to reinstate Dr. G. Stanley Gordon to membership.

The following members were dropped for non-payment of dues:

- Dr. Harold DeWolf, Bristol, R. I.
- Dr. Max B. Gomberg, Providence, R. I.
- Dr. F. R. Warden, Adamsville, R. I.

Adjourned.

J. W. LEECH, M.D., *Secretary*

### ANNUAL MEETING OF HOUSE OF DELEGATES

The annual meeting of the House of Delegates was held at 5 P. M., May 24, 1934, at the Medical Library, with the President, Dr. Chas. S. Christie, in the chair.

The following officers and committees were elected for the ensuing year:

#### *President*

Dr. A. H. Miller, Providence.

#### *First Vice-President*

Dr. R. Hammond, Providence.

#### *Second Vice-President*

Dr. John E. Donley, Providence.

#### *Treasurer*

Dr. J. E. Mowry, Providence.

#### *Secretary*

Dr. J. W. Leech, Providence.

#### *Committee on Arrangements*

Dr. W. P. Davis, Chairman; Dr. Henry McCusker, Dr. H. A. Winkler, Treasurer ex-officio.

#### *Committee on Legislation*

Dr. H. E. Harris, Chairman; Dr. C. H. Holt, Dr. C. F. Gormly, President and Secretary ex-officio.

#### *Committee on Library*

Dr. W. Pickles, Chairman; Dr. H. Partridge, Dr. J. G. Walsh.

#### *Committee on Publication*

Dr. F. N. Brown, Chairman; Dr. C. W. Skelton, Dr. F. J. King, Woonsocket, President and Secretary ex-officio.

#### *Committee on Education*

Dr. Chas. L. Farrell, Chairman; Dr. Harvey Wellman, Dr. R. S. Bray, President and Secretary ex-officio.

#### *Committee on Necrology*

Dr. Wm. Mahoney, Chairman; Dr. J. Langdon, Dr. John Ruisi, Westerly.

#### *Auditor for Two Years*

Dr. F. H. Mathews.

#### *Curator*

Dr. C. D. Sawyer.

#### *Delegate to New England Medical Council*

Dr. J. A. Chase was elected for another year to fill the unexpired term of Dr. H. L. Barnes, deceased.

#### *Alternate to the A. M. A. for Two Years*

Dr. A. Burgess.

The Secretary made a verbal report of the minutes of the Council held just preceding this meeting, and it was voted that the Treasurer's report be approved.

The annual report of the Secretary was read and it was voted to accept same, and place it on file.

## TREASURER'S ANNUAL REPORT, 1933

1933			
Jan.	1.	CHASE WIGGIN FUND .....	\$6,892.21
			<u>\$6,892.21</u>
1933			
Jan.	1.	H. G. MILLER FUND .....	\$5,609.10
			<u>\$5,609.10</u>
1933			
Jan.	1.	J. W. C. ELY FUND	
		1 bond So. California Edison Co. ....	\$ 980.00
		Interest on same .....	50.00
		8 shares Mechanics National Bank Stock .....	480.00
		Interest on same .....	6.00
			<u>\$1,516.00</u>
1933			
Jan.	1.	ENDOWMENT FUND	
		2,000 Oklahoma Gas & Electric Co. 1st Mort. 5% .....	\$1,920.00
		Interest on same .....	100.00
		Cash on hand .....	2,379.32
		Bank interest .....	73.67
			<u>\$4,472.99</u>
1933			
Jan.	1.	PRINTING FUND .....	\$1,677.52
			<u>\$1,677.52</u>
1933			
Jan.	1.	E. M. HARRIS FUND	
		2,000 Mort. Security Corp. of Amer. 5½% .....	\$2,000.00
		Interest in default .....	
		2,000 General Public Utilities Co. 6% .....	1,980.00
		Reorganized during 1933, became 6½% .....	
		Interest on same and refund on reorganizing .....	207.61
		1,000 Central Arizona Light & Power Co. 5% .....	962.50
		Interest on same .....	50.00
			<u>\$5,200.11</u>
1933			
Jan.	1.	FRANK L. DAY FUND	
		3,000 Canadian National Railway Co. 4% .....	\$2,979.75
		Interest on same .....	135.00
		Cash on hand .....	298.66
			<u>\$3,413.41</u>
1933			
Jan.	1.	HERBERT TERRY FUND	
		2,000 Missouri Public Service Co. 5% .....	\$2,003.10
		Interest on same .....	100.00
		Cash on hand .....	315.40
			<u>\$2,418.50</u>
1933			
Jan.	1.	JAMES R. MORGAN FUND	
		500 Missouri Power & Light Co. 4½% .....	\$ 441.38
		Interest on same .....	22.50
			<u>\$ 463.88</u>
1933			
Jan.	1.	JAMES H. DAVENPORT FUND	
		1000 Monongahela West Penn Public Serv. 5½% .....	\$1,027.19
		Interest on same .....	55.00
		Cash on hand .....	148.53
			<u>\$1,230.72</u>
1933			
Jan.	1.	CATALOGUING FUND	
		Transferred from Clinical Conference Fund .....	\$ 708.47
		Gifts received .....	204.80
			<u>\$ 913.27</u>



1934				
Jan.	1.	CHASE WIGGIN FUND .....	\$6,892.21	
				\$6,892.21
1934				
Jan.	1.	H. G. MILLER FUND .....	\$5,609.10	
				\$5,609.10
1934				
Jan.	1.	J. W. C. ELY FUND		
		1 bond So. California Edison Co. ....	\$ 980.00	
		8 shares Mechanics National Bank Stock .....	480.00	
		Paid Rhode Island Medical Society for Journals .....	56.00	
				\$1,516.00
1934				
Jan.	1.	ENDOWMENT FUND		
		2,000 Oklahoma Gas & Electric Co. ....	\$1,920.00	
		Cash on hand .....	2,552.99	
				\$4,472.99
1934				
Jan.	1.	PRINTING FUND .....	\$1,677.52	
				\$1,677.52
1934				
Jan.	1.	E. M. HARRIS FUND		
		2,000 Mort. Security Corp. of Amer. ....	\$2,000.00	
		2,000 General Public Utilities Co. ....	1,980.00	
		1,000 Central Arizona Light & Power Co. ....	962.50	
		Paid R. I. Medical Society for Repairs on Building ....	257.61	
				\$5,200.11
1934				
Jan.	1.	FRANK L. DAY FUND		
		3,000 Canadian National Railway Co. ....	\$2,979.75	
		Paid for Medical Books and tax on checks .....	83.07	
		Cash on hand .....	350.59	
				\$3,413.41
1934				
Jan.	1.	HERBERT TERRY FUND		
		2,000 Missouri Public Service Co. ....	\$2,003.10	
		Paid R. I. Med. Soc. for Subscriptions to Journals ..	27.50	
		Cash on hand .....	387.90	
				\$2,418.50
1934				
Jan.	1.	JAMES R. MORGAN FUND		
		500 Missouri Power & Light Co. ....	\$ 441.38	
		Paid R. I. Medical Society for Expenses .....	22.50	
				\$ 463.88
1934				
Jan.	1.	JAMES H. DAVENPORT FUND		
		1,000 Monongahela West Penn Public Serv. ....	\$1,027.19	
		Paid for Books, Davenport Collection .....	4.00	
		Cash on hand .....	199.53	
				\$1,230.72
1934				
Jan.	1.	CATALOGUING FUND		
		Expenses to January 1, 1934. ....	\$ 128.36	
		Cash on hand .....	784.91	
				\$ 913.27

Collation and Annual Dinner Expenses	\$ 830.43	Cash on Hand January 1, 1933	\$1,308.22
Expenses of Secretary, Secretary service	75.00	Annual Dues	3,935.00
Printing and Postage	142.53	Donations	722.50
Gas	50.35	Harris Fund	257.61
Electricity	84.08	Terry Fund	100.00
Fuel	540.25	Davenport Fund	55.00
Telephone	108.87	Ely Fund	56.00
City Water	16.62	Morgan Fund	22.50
House Supplies and Expenses	452.36	Interest on Daily Balance, January-June, 1933	5.99
House Repairs	128.86		
Librarian	1,660.00		
Janitor	720.00		
Journals, Ely and Terry Funds	87.12		
Safe Deposit	6.60		
Treasurer's Bond	25.00		
Dues, Medical Library Association	10.00		
Delegates, New England Medical Council	53.08		
Delegate, American Medical Association	100.00		
Transferred to Prov. Inst. for Savings	500.00		
Transferred to Cataloguing Fund	204.80		
Expenses of committees and meetings	91.65		
Typewriter	47.50		
Federal tax on checks	3.60		
	<hr/>		
	\$5,938.70		
Cash on Hand to Balance	524.12		
	<hr/>		
	\$6,462.82		<hr/>
			\$6,462.82

#### THE RHODE ISLAND MEDICAL SOCIETY

The 123rd annual meeting of the Rhode Island Medical Society was held at the Medical Library, Providence, on Thursday, June 7, 1934, and was called to order at 10 A. M. by the President, Dr. Chas. S. Christie.

The minutes of the meeting of the Council and of the House of Delegates were read by the Secretary and accepted.

The following delegates from the State Medical Societies were present and brought the good wishes of their respective State Societies to the Rhode Island Medical Society:

Dr. Geo. G. McGregor, Concord, and Dr. Philip H. Greeley, Portsmouth, from the New Hampshire State Society; Dr. Wm. A. Nield, New Bedford, and Dr. Silas V. Merritt, Fall River, from the Massachusetts State Society; Dr. Jas. D. Gold, Bridgeport, and Dr. Jas. J. Donohue, Norwich, from the Connecticut State Society; also, Dr. Frank M. Dunn of New London came from the Connecticut Society.

Dr. Wilfred Pickles, secretary of the Fiske Fund, reported that the Trustees of the Fund had awarded the prize of \$200.00 to Dr. Charles O. Cooke and Dr. James M. Beardsley for the best essay submitted on the subject, "Appendicitis—Diagnosis, Treatment and End Results," for 1933-34, and he further announced that the subject for the competitive essay for 1934-35 would be "Low Back Pain—Its Etiology, Diagnosis and Treatment." Also, the Trustees of the Fiske Fund, as in previous year, voted to give the emolument granted to them by the terms of the Fund to the Library for the purpose of cataloging the Library.

The Secretary read the roll of the deceased members in the absence of the chairman of the Committee on Necrology.

The President announced the presentation by Dr. John W. Keefe of a portrait of Doctor Clarence T. Gardner, who served as Secretary from 1869-1871, who in a short address spoke of Dr. Gardner's attainments as a physician and surgeon, and it was voted that the Secretary write a letter of thanks to Dr. Keefe for his generosity.

The following papers were then presented:

1. "Middle Ear Disease," Dr. Frank M. Adams, Providence; discussion by Dr. L. W. Leech.
2. "Pernicious Vomiting of Pregnancy," Dr. Frank S. Hale, Providence; discussion by Drs. Partridge and Christie.
3. "The Use of Quinidine Sulphate in Heart Disease," Dr. Clifton B. Leech, Providence; discussion by Dr. Fulton.
4. "Total Removal of Right Lung for Bronchiectasis," Dr. E. H. Windsberg, Providence; discussion by Drs. Gerber, Monahan, Julius Kelly.

Recess was called, and luncheon served in the Medical Library at 1 o'clock.

The meeting was called to order at 2 o'clock and the following members from the staff of the Boston City Hospital spoke upon the subject, "Diseases of the Biliary System, Medical and Surgical": Dr. Irving J. Walker, Dr. Franklin W. White, Dr. W. Richard Ohler, Dr. J. B. Hazard. Dr. Walker presented the surgical aspect of the subject; Drs. White and Ohler, the medical aspect; and Dr. Hazard exhibited micro photographs and wet specimens illustrating the pathological feature of the cases touched upon in the papers.

Discussions by Drs. Cooke, G. S. Mathews, Burgess, Cameron, and Drs. Walker, White and Ohler.

The annual address of the President, Dr. Chas. S. Christie, upon "The Present Crisis in Medicine," was then read.

Dr. A. H. Miller, newly elected President of the Rhode Island Medical Society, was inducted into office and adjourned the meeting to reassemble at the Metacomet Club for the annual dinner at 7 o'clock. After the dinner the anniversary chairman, Dr. R. Morton Smith, introduced the speaker of the evening, Senator Felix Hebert from Rhode Island.

Respectfully submitted,  
J. W. LEECH, M.D., *Sec'y.*

#### SECRETARY'S REPORT

May 24, 1934.

I submit herewith the annual report of the Secretary in review of the activities for the year 1933-1934 and upon the present state of the Rhode Island Medical Society.

The usual quarterly meetings were held on the first Thursday of September, December, and March. The annual meeting to be held June 7, 1934, is still under consideration by the committees con-

cerned, but is practically in final and complete form.

The Council met Nov. 23, 1933, Feb. 9, 1934, and on this date immediately preceding the meeting of the House of Delegates.

The House of Delegates held regular quarterly meetings Nov. 23, 1933, and Feb. 9, 1934.

The membership shows a net loss of 4 over the preceding year, due to the heavy toll through death of

Active .....	15
Non-resident .....	2
Honorary .....	1
	<hr/>
	18

There have resigned or been dropped from membership 6, making a total loss of 24. The total membership roll of the Society is:

Active .....	464
Non-resident .....	21
Honorary .....	4

The following deaths have been recorded during the past year:

Dr. Wm. C. Canfield, St. Petersburg, Fla., died Feb., 1931 (non-resident); Dr. Wm. P. Watson, Fanwood, N. J., died Sept. 12, 1933; Dr. Parnell E. Fisher, Providence, R. I., died Sept. 16, 1933; Dr. Chester G. Savage, Westerly, R. I., died Oct. 12, 1933; Dr. Wm. R. White, Providence, R. I., died Nov. 3, 1933; Dr. Frank W. Hayden, Pawtucket, R. I., died Nov. 18, 1933; Dr. Geo. L. Richards, Fall River, Mass., died Nov. 9, 1933 (non-resident); Dr. Thos. E. Duffee, Providence, R. I., died Dec., 1933; Dr. Henry P. Lovewell, Providence, R. I., died Jan. 1, 1934; Dr. A. C. Sanford, Newport, R. I., died Feb. 2, 1934; Dr. Jeffrey J. Walsh, Providence, R. I., died Feb. 14, 1934; Dr. J. A. Webb, Providence, R. I., died Feb. 20, 1934; Dr. Wm. S. Sherman, Newport, R. I., died Feb. 28, 1934; Dr. Robert C. O'Neil, Providence, R. I., died Mar. 21, 1934; Dr. H. L. Barnes, Wallum Lake, R. I., died Apr. 8, 1934; Dr. A. H. Monty, Woonsocket, R. I., died Feb. 9, 1934; Prof. F. P. Gorham, Providence, R. I., died June 4, 1933 (honorary); Dr. David F. Marr, Bradford, R. I., died May 15, 1934.

In September the Editor of the RHODE ISLAND MEDICAL JOURNAL, Dr. F. N. Brown, and I attended the annual conference of secretaries and editors in Chicago under the auspices of the American Medical Association. The chief item of the agenda of this conference was with reference to Medical Relief for the unemployed. In furtherance



of ideas and suggestions born of this conference, the Medical Emergency Relief Committee of the Rhode Island Medical Society, under the able chairmanship of Dr. Chas. F. Gormly, has had accepted by the Rhode Island State Unemployment Relief Commission a comprehensive plan for the several component District Societies whereby the physician shall be paid from State Federal funds for services rendered to persons on Emergency Unemployed Relief rolls. The details of the plan are well known and a report on the actual working of the plan will be made by Dr. Gormly. Admitting the desirability of present financial relief to the physician by this plan, one cannot gainsay the tremendous implications which are thus foreshadowed, of the entrance of governmental and bureaucratic control of the practice of medicine in this country. It is my belief, however, that this House of Delegates acted wisely in committing the Society to a policy of cooperation in this matter. A contrary policy of non-cooperation or even of aloofness from the realities of the evolutionary changes impinging on the practice of medicine would result in our being unable to guide and suggest the course these changes should take, not alone for the preservation of the rights of the physician, but also for the benefits of the people to whom we minister.

It must be apparent to all of us that such leisure time as is vouchsafed to the doctor is being more and more encroached upon by the increasing number and frequency of medical meetings, conferences, hospital staff meetings, etc. So far as I know, the Rhode Island Medical Society is unique among State Societies in the matter of holding quarterly meetings. Most of the State Medical Societies hold one annual meeting, leaving the more frequent meetings to their component District Societies to maintain the interest of their members in medical affairs. It is my conviction that the need of quarterly meetings of this Society no longer exists as it did when the District Societies were poorly organized and sparsely distributed and when the lack of transportation facilities made contact and intercourse between physicians more difficult and infrequent. I, therefore, recommend that the House of Delegates give serious consideration to the question of changing our Rules and By-Laws to the end that the meetings of this Society be made an annual or at most a semi-annual affair.

I wish to call attention, as I have done often before to the importance of District Society representation in the House of Delegates and in the Council. Repeatedly District Societies have deprived themselves of this representation and thereby of a voice in the conduct of the business of the State Society by electing as their Delegates or Councillors members of the District Society who are not Fellows of this Society in accordance with Art. III, Sec. 6 and 7, which requires that Delegates and Councillors from component District Societies must be a Fellow of the Rhode Island Medical Society.

Respectfully submitted,

J. W. LEECH, M.D., *Secretary*

## REPORTS OF COMMITTEES

### REPORT OF THE COMMITTEE ON PUBLICATION FOR 1934

There is very little out of the ordinary to report of the activities and affairs of the RHODE ISLAND MEDICAL JOURNAL.

We have had our troubles but also enjoyed our compensations, and notwithstanding the stress of the times have, through the efficient management of the business administration, succeeded in meeting every obligation and come through whole.

Respectfully submitted,

FREDERICK N. BROWN, M.D.,  
*Chairman*

### REPORT OF THE LIBRARY COMMITTEE

During the past year the Library has acquired 283 volumes. One hundred and sixty-seven of these have been gifts, and these have been duly acknowledged; twenty-five have been purchased; the remainder comprise bound volumes of journals which have been added to our increasingly valuable collection of periodical medical literature. One hundred and four current journals have been regularly received throughout the year.

The work of the Librarian in preparing bibliographies, finding articles in books and journals, and obtaining material from other libraries is constantly increasing and is of great assistance to the members of the Society. Twelve hundred and seventy-six requests for such assistance have been received and cared for during this year.

As noted in the last report, the Committee has been able to engage a cataloguer, and to date 5,536 cards have been typed and filed in proper cabinets. It is unnecessary for us to point out how the steady increase of this catalogue will improve the service which can be rendered by the Library. Funds already at hand make it possible for us to continue this work for the time being, but it will soon be necessary for us to devise means of financing the completion of this essential task.

The shelves in the Reading Room have been rearranged and a small, up-to-date working library, properly classified and completely catalogued, has been established there for quick reference.

The Committee wishes once more to thank Miss Dickerman and Miss Moffett for their conscientious and loyal service to the Library.

Respectfully submitted,

WILFRED PICKLES, M.D.,  
*Chairman*

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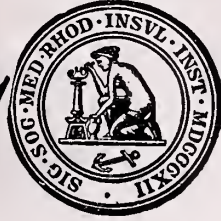
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# THE RHODE ISLAND MEDICAL JOURNAL

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## ORIGINAL ARTICLES

### MEDICAL AND SURGICAL CAUSES FOR MENTAL DISEASE\*

By H. E. KIENE, M.D.

CHARLES V. CHAPIN HOSPITAL, March 1, 1934.

Psychiatry and the other branches of medicine have many problems in common and a close correlation exists between mental and physical components. It is my purpose this afternoon to present three case records which show how the psychiatrist, internist, and surgeon, through their united efforts, have brought about a more thorough understanding of the pathology in these particular cases, the elimination of which has led to improvement.

The mode of examination is seen in the fundamental organization of the Psychiatric Department of the Charles V. Chapin Hospital, from whose records the cases to be presented today have been taken. The responsibility for the proper care of the patient rests with the resident staff. The condition present must be recognized and the proper study made in order to bring about as complete an understanding of the case as possible. With this in mind, a careful and detailed history is obtained, not only from the patient himself but also from those who know him best. It includes an account of any past illness together with a description of his normal personality, that is, his behavior and habits.

As soon as the admission routine is finished, a physical study is undertaken. A general physical and neurological examination usually shows the presence of organic disease, if any, but to be more certain, routine laboratory work is done. This includes urinalysis, blood Wassermann test, and spinal fluid examination. Spinal fluid is examined for cells, pressure, Wassermann test, and protein. All cases found to have evidence of organic systemic pathology are brought to the attention of the internist. If the case is chiefly a medical problem,

he supervises treatment during the patient's stay in the hospital. Depending upon the pathology discovered, other consultations are requested including genito-urinary, gynecology, surgery, ear, nose and throat, dermatology, ophthalmology, and roentgenology.

I present this introduction to demonstrate that the importance of physical examination and treatment is not under-valued in the hospital. Even though the Psychopathic Department has been in existence over three and a half years, there are many physicians in the community totally unaware of the methods practiced in the care of the patients they refer for treatment.

While the intensive physical study is progressing, the resident staff analyzes the mental components. Psychiatric examination is done, including observation and recording of patient's behavior, and mental symptoms such as delusions and hallucinations are studied. The sensorium is examined to show the presence or absence of dementia or confusion. There is also a review of the patient's subjective life, to find out why he presents such symptoms and to see, if possible, how he has reacted to the various influences in his past life. The social setting from which the patient has come is also investigated. In addition to the preliminary study by the consulting and resident staffs, the examination and opinion of the psychiatric visiting staff may be desired.

There is finally a collection of facts and opinions based on the examinations of various physicians, which leads to a formulation of what is wrong with the patient. Following the diagnosis, necessary treatment is instituted whether it be surgical, medical, or psychiatric. Usually the treatment will not fall definitely into one of the three groups, but instead there will be a close relationship found among these. At the same time medical or surgical treatment is instituted, the mental symptoms responsible for the patient's admission to the Psychopathic Department must be carefully watched.

The first case to be presented is one in which the pathology leading to mental symptoms required surgical treatment. The second is one in which the pathology was amenable to internal medication. The last is a case where the pathology led to mental

\*Presented before the R. I. Medical Society, March 1, 1934.

symptoms and required, besides medical and surgical treatment, also psychotherapy.

Before presenting the case material, I would like to call your attention to the type of reaction shown by the patient on becoming mentally ill, and how the symptoms depend on the personality of the patient.

The first patient is a married white woman, forty-two years of age, a housewife by occupation, who was admitted to the psychopathic hospital because she showed disorderly conduct while in St. Joseph's Hospital for treatment of pernicious anemia and proclivencia. Examination on admission showed her to be noisy, agitated, disoriented, confused, and untidy. Family history showed nothing significant regarding nervous, mental, or physical disease.

She was the first of two children, and completed high school at the age of eighteen. She was an exceptionally bright student and worked for six years in one position before her marriage. It was said she was a good-natured woman who was a good talker on any subject. She mingled well with people and enjoyed company. She enjoyed opera, and her reading consisted of books on history and biography. Catamenial history showed nothing abnormal until three years before admission to the Charles V. Chapin Hospital. Marked bleeding occurred, sometimes for a month. She had had a prolapse of the uterus for the past sixteen years. She was married at the age of twenty-one and there were two pregnancies. During pregnancy she was nervous and irritable. She was jealous of her husband and accused him of going with other women.

Five days following her second confinement in 1917, she developed a fever, became disturbed, and imagined her baby was dead. She screamed and talked incoherently about "babies going home." She imagined she heard bells ringing and someone singing. For one month she received treatment at the State Hospital for Mental Diseases, and was then discharged with the diagnosis of manic depressive psychosis, manic phase, condition recovered. During the sixteen-year period between that hospitalization and the one under discussion, there were no mental upsets although there were occasions when she would be suspicious of her husband.

Eight months before she entered the Chapin Hospital, she became irritable and shrieked at her husband and son. Pernicious anemia was suspected at St. Joseph's Hospital where she was admitted

for study. While there she began to worry about her physical condition and was afraid there would be an operation for the uterine prolapse. She talked loudly and at times incoherently, and would repeat vowels and rhymes such as cat, bat, rat, etc. It became necessary to transfer her to the Psychopathic Hospital.

Physical examination on admission showed her to be a thin, pale, middle-aged woman with prolapsed cervix protruding through the vaginal orifice. The examination was otherwise essentially negative. Laboratory findings showed negative spinal fluid, normal blood chemistry, negative blood Wassermann, and blood smear showed definite achromia and moderate variation in size (more microcytes than macrocytes), with no polychromatophilia, stippling, or immature forms.

Dr. Louis Kramer of the medical visiting staff considered the anemia as secondary to metrorrhagia. Dr. R. DiLeone, gynecologist, made a diagnosis of complete uterine prolapse and advised operation as soon as patient was in better physical condition.

Further laboratory work showed WBC 8,850 and RBC 3,660,000 with hemoglobin 50%. Catheterized urine specimen indicated slight trace of albumin but was otherwise negative. Gastric analysis—free HCl with histamine. White blood cells were found on repeated examinations. Examination of the stool for blood was negative. Red blood count three weeks after admission was 4,990,000 and hemoglobin 65%. Blood smear at this later time showed that most of the red cells were achromic. There were a few macrocytes but there were more microcytes. The picture suggested a secondary anemia rather than pernicious anemia.

Dr. McCann, gynecologist, saw the patient one week later and said, "Complete prolapsus uteri. Uterus small, no masses or adhesions on either side. Would advise vaginal hysterectomy." Several donors were typed, in preparation for the possible need of transfusion at the time of operation.

During the time her physical condition was being studied, a mental examination was also in progress. She was at first disoriented, talked incessantly, was confused, and her trend of talk was disconnected. She was unco-operative, at times resistive, and she showed marked motor activity and restlessness on the ward. The mental content could not be definitely elicited because of her incoherence. The following is a sample of her productions: "The



hemoglobin—the red is a bet—I knock—I no scared—the agony—the nurse that put me there—I was stiff—I had a corpse—I get the melody, the rhythm,” etc. She was silly and laughed frequently. She was destructive (tearing the bed clothing) and she had to be fed through a stomach tube. She voided and defecated in bed.

After twelve days, she was rational and pleasant for short intervals. She was co-operative, and ate breakfast and dinner. On the 15th day she said, “Being a virgin had nothing to do—praying at the foot of the crucifix—what have I done? My God, deliver me from here.” She cried and pulled her hair. On the 28th day she acted silly at intervals, laughed for no apparent reason, tended to be seclusive, and was irritable. She said, “There isn’t much here to read. I have read a great deal and I like to read when I get something worth while.” She ate well. On the 40th day she was irritable and got out of bed when not watched. She talked and sang to herself, and was very childish in her manner. She collected odds and ends and tucked them under her mattress. The patient was neat in personal appearance, pleasant when spoken to, happy, her appetite was good, and she attended occupational therapy class.

On the 45th day (October 17, 1933) she was transferred to the surgical ward, where a Mayo operation for vaginal hysterectomy and a perineorrhaphy were performed by Dr. McCann. Pathological report disclosed atrophic endometritis, low grade chronic inflammation of cervix. On October 27, Dr. Burgess of the visiting medical staff said, “The anemia is apparently microcytic and probably is amenable to adequate iron therapy. Advise iron and ammonium citrate, gr. XXX, T.I.D., p.c.”

Ten days post-operative, she was transferred back to the Psychopathic Department. She was pleasant and said she was glad to be back again where there was more sunshine. Since the operation she has shown no gross mental symptoms.

Pre-operative treatment consisted of sedatives, tube-feedings, continuous baths, liver intramuscularly, iron and ammonium citrate. Post-operative care included tonics, liver, occupational therapy, fresh air, and sunshine.

In this patient there was an anemia, on admission to the hospital, associated with an active, confused, mental reaction. As the anemia responded to therapy, the mental symptoms took on a different form, consisting of less confusion and more coher-

ent speech, but with a continuation of the over-activity and flight of ideas. Following operation, although her R.B.C. was lower than it had been before operation, there was a clearing of the overt mental symptoms. After the operation, because of an abscess, the R.B.C. became lower than it had been at any time since her admission to the hospital, but this was not associated with any appreciable change in her mental attitudes, which were practically normal.

Her mental illness sixteen years ago occurred after childbirth, which was associated with a loss of blood and followed by a prolapsed uterus.

In my opinion there was more than an anemia responsible for the mental symptoms. It is quite likely that the uterine prolapse and its psychological effect on the patient's life was an additional factor. At least it seems necessary to consider all angles before the patient's reaction can be satisfactorily understood.

The second case is one in which the pathology leading to mental symptoms proved to be chiefly a medical problem. Another woman of the same age (forty-two years) was admitted to the Psychopathic Department of the Charles V. Chapin Hospital because of auditory hallucinations, confusion, and rambling conversation.

Her father had died at the age of fifty-six years of a ruptured appendix. He was described as having been a very kind man. The mother died when fifty-two years of age of pneumonia. She was said to have been a smart and thrifty woman. Patient's only sister (now forty-eight years old) is a pleasant, sociable woman. No instances of psychosis, epilepsy, or familial disease were elicited.

Patient was born in Sweden. Birth was normal and she was breast fed. No childhood diseases are remembered. She finished six grades in a country school in six years and then worked on a farm. When fifteen, she came to the United States and worked for one family for six years doing housework. She was married when she was twenty-eight years old. There were two pregnancies and both children are still living. The husband was described as a drunkard who was very abusive and never supported his family. All the time she lived with him she was under considerable nervous strain. She finally divorced him six years ago as he would come home “raving drunk.” Following the divorce she bought and ran a rooming house which she has managed ever since, being quite successful until the

economic depression. In spite of the depression, she was able to pay her bills and support her children. The clinical history is negative for operations, accidents, or serious illnesses.

She is described as having been a very happy and good-natured woman who worked hard and had very little time for recreation. Even during her married life she had to take in washings to support the home. She was a thrifty woman and a good manager. She was reserved and reticent about telling her troubles. She is a Protestant, but rarely attends church. It was claimed that she abstained from the use of alcohol, drugs, and tobacco.

Five months prior to her admission, she began to vomit blood and show blood in her stools. She was treated by Dr. Cutts. The bleeding stopped within two days but she remained in bed for two weeks. She then got up and returned to work. Three months later she had the second spell in which she vomited blood and showed blood in the stools. Dr. Schmidt treated her and she was in bed for three weeks, and then recovered and seemed quite well until two weeks before her admission, when she again vomited blood. During the first week she was unable to talk because of weakness and during the second week she began to show mental symptoms. She thought that people were stealing her furniture, she was confused, and she talked about seeing people all around her. It was difficult to keep her in bed as she kept insisting on getting up and cooking. The night before admission she threw herself off the bed, got up, and played the piano.

On admission to the hospital the patient was very pale, underweight, and undernourished. Mucous membranes were pale, and lower teeth were in poor condition. There was a suggestion of a presystolic thrill, and both systolic and diastolic murmurs were heard and transmitted through vessels of the neck. Neck vessels were distended and showed marked pulsation. There was a tremor of the hands. Blood pressure was 168/90, temperature 100.8° and pulse 100. Red blood count was 1,490,000 with hemoglobin 26%. In the blood smear there was a variation in size, shape and staining of the red cells with some achromia and no premature forms. The smear suggested an anemia of a secondary type. Slight possible trace of albumen was found in the urine.

She was restless, confused, disoriented, and threw the bed clothing on the floor. She was incoherent at times. Voices were heard, especially at night, which gave her advice about her children.

She realized they were imaginary voices as there was no one around at the time.

She was in a critical physical condition, so members of her family were typed for transfusion. She was kept quiet with sedatives and was given 10 c.c. of liver extract intramuscularly. On the third day she received a transfusion of 390 c.c. of blood. Again on the fifth day, a 350 c.c. transfusion was given. The next day she was drowsy, confused, incontinent and restless, and her color was poor. Temperature reached a maximum of 103° with pulse of 120. The red blood count was 2,450,000. Very slight trace of blood was found in the stools. The blood and spinal fluid Wassermann tests were negative. She was placed on a soft, non-irritating diet.

On the sixth day, and through the greater part of the night, she was confused, noisy and restless. She told one of the doctors he should go to the Rhode Island Hospital because he couldn't get enough experience at the Chapin Hospital. Her color seemed better, her temperature was 100° and pulse 96. The red blood count was 2,990,000 and hemoglobin 45, reticulocytes 1%.

There was not much change in her condition and on the eighth day after her admission she was drowsy and confused. There was incontinence. At intervals she was restless and tried to get out of bed over the sideboard. The red count was 3,560,000, hemoglobin 50, reticulocytes  $\frac{1}{2}\%$ , temperature 100° and pulse 96. Treatment consisted of iron ammonium citrate, sedatives, liver by hypodermic injections, and soft diet.

Four days later (on the eleventh day of her hospital residence) she seemed less confused although she thought she heard her children upstairs. Her red blood count was 3,900,000 with hemoglobin of 50 and reticulocytes 1%. Temperature was normal, and pulse ranged between 95 and 100. Previous treatment was continued.

By the eighteenth day she was pleasant and cooperative, and seemed pleased with herself. She complained of not getting enough to eat. The red blood count on that date was 3,850,000 and hemoglobin 60%. Temperature was normal and her pulse was between 95 and 105.

On the twenty-ninth day (the day before her discharge from the hospital) she took more interest in ward activities and was anxious to go home. She worked well about the ward and was not talkative or silly. Patient was sociable and pleasant and



stated she was anxious to return to work. She was happy when she saw her children. The red blood count at that time was 4,620,000 and hemoglobin 80%. Temperature was normal, pulse was from 70 to 80, and there had been a gain in weight of four and a half pounds.

While in the hospital, she was examined by Dr. Louis Kramer and Dr. Russell Bray. Both were of the opinion that she should receive palliative treatment because of her poor physical condition.

After her discharge, she returned to the Out-Patient Clinic where Dr. Bray continued the clinical study. Gastro-intestinal X-ray examination resulted in the report of extreme irritability, filling defect, and speed of emptying indicative of active pathology in the duodenal bulb, and suggesting ulcer. Red blood count was 3,350,000 and hemoglobin 58%. She had a hyperchlorhydria. Dr. Bray felt certain of the diagnosis of duodenal ulcer and is continuing her treatment in the Out-Patient Department where she is making satisfactory progress.

In this patient there was a more definite association of mental symptoms with the degree of anemia. Supportive treatment led to both physical and mental improvement. Earlier environment difficulties may have had some bearing on her tendency to develop mental symptoms when the trauma of the anemia lowered her resistance. Also, it is to be noted that her mental symptoms continued as long as the tachycardia and ceased when the pulse became normal. This may indicate the length of time required by the body and mind to readjust after such a severe illness. The body weight also seems to substantiate such a view. Her admission weight was 105 pounds and two days before discharge this had not varied more than one pound. With the return of her mental condition to normal, she gained rapidly and now her weight is 130 pounds, the most it has ever been.

The last case is one which necessitated psychotherapy in addition to medical and surgical treatment. A variety of conditions occur in cases of this sort. After omitting epilepsy, syphilis, alcohol, and the changes incident to old age, the following are examples:

1. Cardio-vascular-renal disease
2. Carcinoma of the esophagus
3. Carcinoma of the lung
4. Prostatic calculi
5. Infectious arthritis

6. Pernicious anemia
7. Auricular fibrillation
8. Perineal laceration
9. Sclerosed hymen
10. Hypothyroidism

In the cases observed, these diseases were associated with personality disorders of various kinds, but it is impossible, in the limited time this afternoon, to give the complete hospital record of each case in detail. For brevity, therefore, only a brief abstract of one example will be given.

A white woman, forty-five years old, was admitted to the psychopathic ward because she threatened suicide, was unable to perform her housework, and had crying spells.

The history stated she had always worked hard and had been the support of her father and mother. She had no personal experiences with men until her marriage at the age of forty-five to a widower five years her senior. Two days before her marriage, her mother (who had always been domineering) started weeping and lamenting over the approaching marriage. Following this, the patient walked the floor all night. She thought that something had snapped in her abdomen.

Following her marriage, she was afraid of dying. Visions of her mother and father appeared, which she was unable to get rid of. For several months she complained that her head was light and also complained of a secretion from her stomach. She had periods of vomiting saliva. At night she would become fearful, would hold herself rigid, and cling desperately to her husband, sometimes almost choking him. When her mother visited, she was sent away, the patient saying she did not wish to have anyone but her husband. She became sexually aroused, but was fearful of sex relations and when her husband attempted to have coitus, she became panicky and dug her nails into him, and fought him off. She took little interest in her personal appearance, frequently laughed at her husband, and wandered about the streets by herself. She made no attempt to form acquaintances and frequently was found weeping, and she talked of ending it all by jumping out of the window. She lost about seven pounds weight in eight months. Her appetite became poor. She was seen by many physicians and also at the State Hospital Evening Clinic, and was finally admitted to the Charles V. Chapin Hospital.

She said she was deeply in love with her husband, but continued that he had no patience with her.



He threatened her with divorce and called her "crazy." Sexual relations had been unsatisfactory.

Physical examination presented no abnormal findings other than a sclerosed hymen which would make proper sexual relations impossible.

This patient presented a complex problem. Her anxiety and depression were apparently the culmination of many maladjustments which patient had during her life. She had always been an inadequate individual, one who was dependent on others for moral support. She lived in an unhealthy environment in her parents' home before her marriage. Her marriage apparently was an attempted escape from this unhappy situation but instead of improving her condition, she had to make a more difficult adjustment relating to sex. Because of her emotional immaturity and total dependence, a sex adjustment was impossible, and as a result she was admitted to the hospital in a mild depressive state, showing marked emotional instability and borderline intelligence.

It was thought that certain anatomical conditions might have had some influence in making the patient's sex adjustment more difficult as it was found that she had a sclerosed hymen and a Bartholin cyst which impeded normal sex relations. She was therefore referred to the gynecologist and operated by Dr. Waterman. Her recovery from the operation was satisfactory although her mental condition did not immediately show much change. She was given privileges while in the hospital and allowed to come and go as she wished.

An interview with her husband showed him to also be an emotionally immature person who was self-centered and spent most of his time feeling sorry for himself. Likewise, her family did not offer much in the way of possibilities for assisting the patient to a better adjustment.

It was believed by the staff of the hospital that the patient was not suffering from a psychosis but was rather an inadequate, mentally retarded individual, who was unable to make an adult adjustment and the case would require a great deal of follow-up treatment, both of the patient and her husband. This has been carried out since she left the hospital. Now, eleven months later, she has taken a new interest in her surroundings, and is able to properly care for her home. There are not so many quarrels between the patient and her husband, and their personal relations have improved markedly.

Surgical treatment in this case was quite essential, but psychotherapy was of equal importance. Few patients' mental troubles are as easy to straighten out as this last case has been.

Before psychotherapy is instituted, it is important to know what intellectual assets are present in the patient under consideration. A person with normal or superior intelligence usually presents a more complicated mental conflict than does one who has dull normal or borderline intelligence. In the latter, the psychotherapy is on a more superficial level and the patient's problems can quite often be explained on a physical basis; that is, the mental difficulty has been caused by an interference with physical pleasures on which such individuals are largely dependent.

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### CANCER OF THE MOUTH\*

By PETER PINEO CHASE, M.D.

122 WATERMAN ST., PROVIDENCE, R. I.

Cancer of the mouth is one of the most terrible forms of this great scourge of mankind. The patient is a great sufferer himself and frequently a very disagreeable object to his associates. In the past, in our community at least, a fatalistic attitude has been held towards these cases. This was due to the advanced and hopeless stage in which the patient presented himself for medical advice. But with the publicity now given to the cancer question and the enlightened attitude of the general practitioner, and what is very important, of the dentist, many of these cases are now seen when susceptible of cure or at least of palliation and prolongation of comfortable life. The crux of successful treatment is of course here as everywhere to get the case early. And as Channing Simmons emphasized several years ago, we must consider the period of relief given by proper treatment rather than cure.

Cancers of the buccal mucus membrane or interior of the mouth are frequently considered separately from the lip, being of a more malignant type in general and because of the difference in lymphatic drainage being more extensive in their metastasis.

Cancers of the lower lip are common, especially in men, and are supposed to be associated with

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\*Read before the April meeting of the Providence Medical Association, 1934.

smoking, particularly a pipe, although of course far from all cases occur in smokers. The greater use of tobacco in modern days by women apparently is not causing lower lip cancers in this sex. Personally I have never seen a case. At the Tumor Clinic at the Rhode Island Hospital, roughly about 10 per cent of our cases have been of the mouth and lip, and the lip cases have been exactly equal in number to those inside the mouth. Nowhere in the human body is cancer more easily and quickly detected. In fact, one would suppose that notice and attention to the trouble would be absolutely forced upon the patient. Any crack or ulceration which does not heal in a few weeks should be considered cancer until proved otherwise. Therefore a biopsy should be done and unless the lesion is very large the entire affected area to well outside any induration can be removed which in itself will probably give a local cure.

Undoubtedly the radium treatment of these lesions is strongly advocated now but judgment in the use of radium requires much experience. As one writer recently said, "The mere possession of radium is of no more consequence in itself than is the possession of a set of surgical instruments." Overdosage causes burns that are long and distressful in healing. An excision is healed in a week. Underdosage is worse than no treatment. Our clinic has seen some sad cases of this kind and we feel that the average man can use surgery more safely than radium. Theoretically it sounds simpler to use radium than surgery. Many people are still heard to say, "I don't want to have the knife." But there is a good deal of fallacy here. Surgically the average lip cancer can be removed very satisfactorily under local anesthesia and heals by first intention with little discomfort and with a good cosmetic result. The surface application of radium requires great judgment in dosage, does not direct its attack to the depths of the tissue which is the critical area and leaves an ulcer taking many weeks to heal. Apparently the use of needles buried in the lip is increasing and this is in itself a surgical procedure needing anesthesia. Many of the users of radium do not take biopsies here and probably experienced men seldom make a mistake in diagnosis but in our clinic we have a strong predilection for a microscopical examination which influences our treatment and prognosis.

The lymph glands in the neck should have in many cases either heavy radiation or dissection with

most clinics advocating dissection in favorable cases. This should be done en masse with one incision running under the chin and back to each jaw angle taking the contents of the sub-mental and digastric triangles. Cancer of the upper lip is rare and like infection here is apparently especially serious.

Inside the mouth irritation is credited with initiating cancer. Bloodgood gives a very large role to tobacco and poor mouth hygiene; poor teeth and syphilis are incriminated. A surprising number of cases that we have seen have had one tooth after another pulled in an attempt to clear up a supposedly infective process.

Any gum that does not heal soon after an extraction should be examined for cancer. Of course a Wassermann should be done in all cases, but the mere fact that it is positive is no proof against cancer which is often associated with syphilis. If a lesion does not heal rapidly with anti-syphilitic treatment a biopsy should be done. A couple of years ago we had a case of proved syphilis with a lesion on the tongue. A biopsy showed no cancer, but a second biopsy showed a grade III epidermoid carcinoma and the patient did well for awhile with intravenous medication, partial glossectomy and a block dissection of the neck.

Formerly we were taught that it was dangerous to cut into cancers for biopsy, but all these are already well irritated and a biopsy followed by quick removal we feel does not increase the risk. In December several years ago a college friend noticed a sore on the dorsum of his tongue which appeared to be relieved when a tooth was fixed. In February he noticed it again. A well-known dermatologist at the Massachusetts General Hospital cheered him up by pronouncing it either syphilis or cancer. Although a married man and apparently all that a teacher of youth should be, he had Wassermann done at different times in Massachusetts, and at two laboratories in Providence. All were negative. Then we removed the area with a liberal biopsy and found no evidence of cancer, but merely granulation tissue. A fungating mass covering most of one side of a tongue a year or two ago was removed and frequent sections showed nothing but a papilloma. Both of these cases are perfectly well. Gross pathology in the mouth is frequently difficult to interpret and biopsies are of great value.

Right here it may be in line to speak of the question of grading cancers. The low grades of malignancy



nancy are in general amenable to surgery and radio resistant and the high grades the reverse, but Dr. Clarke, I think, will agree that grading is far from exact and at best very dependent on the personal equation of the pathologist. The history size and appearance of the tumor are valuable in determining treatment as well as the microscopical findings. A lip done last Spring followed by neck dissection was graded 1, but died in three months. Another lip graded 11 went to pieces almost as rapidly. And some tumors that on first examination appear low grade change their nature so that sections taken from recurrences show an entirely different picture.

Women have much less mouth cancer than men, but in St. Louis they told us they frequently saw female cases from the Ozarks where the women chew snuff. A few years ago we removed a small cancer from the side of a woman's tongue and some time later an apparently entirely separate one from the other side. —She did not smoke but had false teeth and used much vinegar and other sharp acids. Recently we treated a cancer on the mouth of an old colored woman who confided secretly to several of us that she smoked a pipe. Within a few years we have had three other cases in women.

Radium is the method of choice for buccal cancer in most clinics now but where the growth is early, low grade and small so that it can be easily got around as in the tongue apparently a complete removal with the high frequency knife gives the quickest and excellent results. This with a block dissection of the entire side of the neck has a number of satisfactory representatives still walking the streets of Providence. Dissection of both sides of the neck is advocated but so far we have never convinced both ourselves and the patient that it should be done. One side usually spoils a morning for the two of us.

The earliest tongue case I assisted at was in a clergyman who before the war had a hemiglossectomy and neck dissection. If I remember rightly in about three months he was lecturing at Divinity School and talked well until his death from pneumonia a few years ago; but extensive and mutilating surgery for cancer in the mouth has given way almost entirely to radium. Dr. Finney told me that he had done four or five complete removals of the tongue but that he would never do another.

Occasionally we find a mass of cancerous glands in the neck with no primary focus demonstrable. It has been suggested lately that these may originate

in the depths of the tonsillar crypts and if the neck can be handled it is advisable to remove the tonsil surgically.

One unusual case that might be mentioned is an elderly man who had a growth on his anterior pillar that appeared possibly removable by surgery, so we took it off, put some radium in a spot that did not seem to heal satisfactorily, dissected metastatic glands that afterwards appeared in his neck, had Dr. Pickles do an injection for nerve pain and now a couple of years later he shows no sign of trouble and is perfectly happy. Which teaches that it is worth while persevering in some of these difficult cases.

The floor of the mouth is not a region lending itself well to surgery and tumors here are usually of the higher grades responding to radiation so radium is usually employed here. The same is true of the inside of the cheeks where surgery is mutilating and radium produces results.

Care must be taken to checkup by X-ray where there is any possibility of the bone or sinuses being involved. Radiation is not effective where cancer of the surrounding soft tissues has spread thus and surgery offers the only hope of clearing up the bone condition.

Epulis is a much mentioned but apparently not remarkably common tumor on the alveolar process appearing as a firm circumscribed small swelling. Although not malignant, they will continue to grow if not entirely removed, and this must be done surgically. Mixed tumors of the type commonly associated with the parotid gland may be found anywhere in the mouth and again require complete surgical removal.

Wherever radiation is indicated, gold implants of radon are very convenient and effective but are apt to irritate a good deal and in extensive cases are expensive. We have a number of platinum needles such as the English use and where we can keep them in (and it is surprising how they will stick with some sewing) the results are good. We have used both neck dissection and X-ray with this; the former where we felt more optimistic. Wherever there are bad teeth near the lesion we have them removed. Some of this work is done under local anesthesia but the tongue is a refractory organ and despite the patient's desire to co-operate we usually feel the need of a general anesthetic when this organ has to be handled. Avertin has given

(Continued on page 134)



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309 Olney Street, Providence, R. I.

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## EDITORIALS

### A HOBBY EXHIBITION

The unrelenting responsibilities of the practice of medicine in any of its forms are so constantly before the average doctor that it is difficult for him to find time for protracted vacations. It is therefore quite natural that he should take advantage of his fragmentary spare time in transitory forms of diversion and mental relief. Such is the etiology of the professional man's hobby.

A casual inquiry of the form which this "hobby-culture" takes in individual cases reveals a surprising diversification of endeavor and an equally unexpected expertness of many of the men in these vocational efforts. There are among our colleagues notable collectors of books, accomplished musicians, enthusiastic philatelists, sculptors, artists, photographers, and horticulturists, as well as proficient and experienced woodsmen and anglers, and some splendid woodworkers.

With this in mind would it not be worth while for one of our medical societies to hold a hobby exhibition? Such a display would be of wide-

spread interest both within and without the profession and would undoubtedly bring out some striking examples of unknown and unsung talent among our colleagues.

A similar effort last fall by the doctors of Greater Boston revealed some splendid work and attracted great interest and very favorable comment. An exhibition at Brown University showed up a great deal of hitherto unknown talent among the faculty members, much of which has since become mutually helpful in the teaching work of that institution.

An exhibition of such inclusiveness as to be expressive of all Rhode Island doctors' pastimes would be a salutary step in the direction of extra-medical interest and mutual respect. Let's try it.

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### DOCTORS AND THE DEPRESSION

The economic stringency of the last few years has precipitated many changes and one of these has been the changed attitude of the medical profession toward public health in its broadest aspects. Previously physicians have been content to give close attention to their own practice without giving much thought to public medical service. Ascribe, if you will, to selfish motives there is, however, almost certain brighter prospects not only for the physician's welfare but also for public health service in general.

Physicians have been shaken out of a sort of a lethargy. They have observed the rapid development of hospital service and of public health services which have been developed to meet real needs which the public demanded, observed it with some grumbling but without any concerted effort to become public health leaders. Many measures now carried out are the result of official health laws and regulations and private organizations. People are getting to be very much health-minded and it is no wonder that the laity have taken the initiative to get some things done which should have been done some time ago. If the American Medical Association, state medical societies and medical schools had foreseen or appreciated the importance of public health and had done some constructive work the whole public health program would have been far in advance of what it is today. They did not, and physicians have grudgingly followed the lead of a few distinguished physicians who have devoted their lives to fathering sane public health measures,

in the face of opposition not only from physicians but also the inertia of the public. In a way it has been a thankless job, but at least these pioneers have seen an awakening of the public to the need of better medical service and an appreciation on the part of the physicians that it is needed and is inevitable.

Perhaps it is not too late for the medical societies to take or regain the leadership in supplying a better curative and preventive medical service. At any rate, they are fully aroused that something must be done. They are seeing the spectre of socialized medicine, and some there are who are more or less resigned to something of the sort.

The progress which has been made in better care of the sick and injured has been brought about by the initiative of a free profession unstifled by bureaucratic rules and regulations. The progress in this country in the quality of individual treatment both medical and surgical is something of which the profession may be proud. Why can't that same driving force be harnessed to bring about better medical service to everybody alike whether rich or poor, curative or preventive?

On the shoulders of the physician is rightly placed the burden of caring for sick people and the prevention of disease, whether it be done gratuitously or for adequate fees. If he does not accept this burden and adjust it not only for his own welfare but also for the welfare of the whole country then he is shirking his duty, and the high esteem which he now enjoys will be dimmed.

The whole problem is complicated. It will require a great deal of study. Certain things should be accomplished. People must be taught that they should help to carry the financial burden individually as far as possible. Some of them are in no economic condition to bear their share and must be assisted. It must be worked out with patience by medical societies, hospitals and public health authorities in friendly cooperation.

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### CANCER OF THE MOUTH

*(Continued from page 132)*

satisfaction in most instances. Post-operative care of the mouth is important, and we use hourly lavage. Many of these cases have pain afterwards, and we have been helped at times by Dr. Pickles, who has made alcohol injections of nerves for us.

We have said nothing about pre-operative radiation, having up to the present very little experience with it. The question of radiation versus block dissection we feel still to be a debatable one.

It may seem that I have protested at places in this paper against the radiation treatment of mouth cancer. It is not intended to be so but a number of papers recently by radiologists, especially from some of the outlying parts of the country, have apparently sought to show that surgery is an out-moded method. Probably at the Tumor Clinic at the Rhode Island Hospital we use more radiation than surgery. Our attitude has been well expressed by Carl Eggers, who said recently: "I am convinced that a suitable combination of the two methods has great advantages and holds out more hopes to the patient than the use of either alone."

But, whatever you do, do it quick and hard. Not only is the case handled more easily in its early stages, but it is generally agreed that a cancer once treated, especially by radiation, seems to become more resistant if not cured and secondary treatments are less effective.

### *Conclusions*

1. Cancer of the mouth is an especially terrible form of a dread disease.

2. Modern education of doctors and laity is improving the results from treatment.

3. Lower lip cancers are less serious than buccal cancers and should be treated by excision or radiation in the hands of experts and usually dissection of the upper neck.

4. Irritation is a predisposing factor.

5. Syphilis does not exclude cancer.

6. Biopsies must be done.

7. Grading degrees of malignancy is valuable, but far from infallible.

8. In buccal cancer the anterior tongue has the best prognosis and the tonsillar region worst.

9. Where the growth is easily removable and apparently not of a more malignant type, we prefer surgery, but otherwise radiation.

10. Neck dissection should also be done if the case is not too unfavorable locally: otherwise X-ray should be used.

11. Mouth hygiene both pre- and post-operatively is important.

12. Pain can be treated by nerve injections.

13. Quick decision and vigorous treatment are the watchwords.

### PNEUMOTHORAX AND PHRENICECTOMY IN THE TREATMENT OF PULMONARY TUBERCULOSIS\*

By J. MURRAY BEARDSLEY, A.B., M.D.C.M.  
180 ANGELL STREET, PROVIDENCE, RHODE ISLAND

The injection of gas into the pleural cavity for the purpose of putting the lung at rest was first accomplished by Forlanini of Italy in the year 1894. In this country John B. Murphy was the first to employ pneumothorax. In 1898 he reported five cases of pulmonary tuberculosis treated by this method. This discovery has, as you know, revolutionized the treatment of tuberculosis of the lung. The profession was slow to recognize the value of pneumothorax, and articles published a very few years ago refer to it as a method to be employed as a last resort after more conservative treatment has failed. This one idea—the promotion of rest by means of collapse—has led to many methods for the purpose of accomplishing the same end so that today when we are considering collapse therapy, we have to think of pneumothorax, unilateral or bilateral, oleothorax, phrenicectomy, apicolysis, intrapleural pneumolysis, intercostal neurectomy, extrapleural thoracoplasty and combinations of these and other less commonly used methods for promoting collapse of the lung.

Naturally, with all of these procedures at our disposal, a careful estimation of the value of each must be made if the maximum in results is to be accomplished—each case presenting, as it does, individual problems requiring various modes of attack.

With each discovery of new methods for promoting collapse it is understandable that each at the outset has had its ardent advocate and has been used in many instances to the exclusion of other methods to the point where enthusiasm has influenced good judgment. But, through the mistakes that have been made has come a clearer understanding of the indications for the use of each procedure, so that today the therapy of lung collapse rests on a much safer and saner foundation, notwithstanding differences of opinion that still exist.

The success of our final results depends to a great degree upon the proper selection of cases for treatment. This applies to surgical as well as medical cases. It is, therefore, of extreme importance

\*Read before the Providence Medical Association, March 6th, 1934.



that therapy in each case be relegated with care. At the collapse therapy division of the Charles V. Chapin Hospital it is our policy, and in my opinion a sound one, that no treatment be instituted until there has been a thorough investigation and discussion of every case, the participants of the conference being the tuberculosis specialist, the internist, the roentgenologist, and where surgical treatment is being considered, of course, the surgeon. These friendly discussions of problem cases as to diagnosis and treatment have been of inestimable value in the handling of cases and I believe that most of us have found them instructive.

When we come to a discussion of the indications for collapse therapy, as is the case in most medical conditions, it is difficult to lay down hard and fast rules, for the type of lesion and problem present in each may have many points of difference. Time does not permit an intimate study of the different pathological lesions that are encountered, such as exudative, productive, pneumonic, etc., but a clear understanding of the interpretation of these lesions is essential in order to follow the progress of the case intelligently and in order that intelligent treatment be carried out. Relative to this, our success has been due to a great extent to the improvement in X-ray technique and interpretation. We must not pass judgment, however, on a patient as soon as the evidence of the X-ray plate has been heard. The patient's history, physical examination, social and economic status, and temperament must be taken into consideration before therapy is advised.

The policy of the past to defer pneumothorax until other methods had failed has given away to the policy of beginning collapse therapy early. Practically all cases of unilateral disease, with or without demonstrable excavation, and where the contralateral lung is not too extensively involved to bear the additional burden thrown upon it, must be considered as possible candidates for collapse therapy. The decision as to whether or not there is an active lesion in the contralateral lung is frequently difficult to make, and careful physical examination, X-ray study and occasionally trial pneumothorax may be necessary in order to decide this question. When dealing with early lesions, especially soft subclavicular infiltrations, we are faced with making a decision as to whether to give the patient a trial at bed rest or whether to begin pneumothorax without delay. As we know, many will do well if collapse therapy is not undertaken.

On the other hand, in this type of case—as opposed to the chronic fibrotic lesions or those with thick-walled cavities—adhesions are less likely to be present and we may expect to achieve our best pneumothorax results in cases of this type. As a rule we may say that the success of collapse therapy is directly proportional to the degree of compression achieved, and that in dealing with excavations, to the degree of approximation of cavity walls. Probably neither of these policies—that of watchful waiting, or early pneumothorax—can be seriously condemned, but it has been our tendency to advise pneumothorax early, feeling that by so doing we will minimize the danger of the more serious complications. In this type of case we must give more thought to those—and this applies especially to the adolescent and early adult age groups in which treatment by bed rest may result in an advance of the disease either in adjacent lobes or in the contralateral lung, or both. The waiting policy, when pursued in lesions of this type, will in many cases lose for us the golden opportunity for an early cure and in others may prohibit the use of collapse therapy because of invasion of the opposite lung, or the development of a pleurisy may render the possibility of pneumothorax inadequate or impossible. In minimal apical lesions which tend to respond to treatment by bed rest and where pneumothorax is usually ineffective because of adhesions, we are justified in pursuing the policy of non-interference, but in these as in all others there should be a careful supervision. In the pneumonic type of lesion with its tendency to early excavation and invasion of other lobes, there is still a difference of opinion as to the value of pneumothorax. It has been our policy to recommend pneumothorax in the pneumonic type of lesion when the opposite lung is not involved. With reference to those cases presenting themselves with far advanced disease of which many in the past would have been considered “hopeless cases”—with more weapons of attack at our command, many may be salvaged if collapse therapy is undertaken.

Pneumothorax still occupies the first place in collapse therapy and as a rule is our first choice in all cases selected for this type of treatment. It is our feeling that the complications encountered during the course of pneumothorax are not a sufficient indication to justify any surgical intervention which will produce a permanent type of collapse, as a preliminary measure. This would appear to be

more especially so since oleothorax and intrapleural pneumolysis are becoming more effective as adjuncts to pneumothorax treatment. It is not necessary to go into a description of the technique of this procedure which in itself is not a difficult one, but to follow a large number of cases over a long period of time, treating the complications as they arise, calls for judgment, knowledge and eternal vigilance.

There would seem to be a definite indication for bilateral pneumothorax in a small number of carefully selected cases. Up until the present we have found only one case in which we have felt that this form of treatment was indicated. This particular case was in a patient with an upper lobe cavity receiving a partial collapse in this area and who later developed a spreading lesion in the opposite lung. Some cases that have come to my attention, however, in patients who had extensive disease on one side and a minimal lesion on the other, appeared to show signs of lessened toxemia and more general improvement when the lung with the more advanced lesion was completely collapsed, and the other lung allowed to re-expand. Here again each case is an individual problem and the selection of cases should be made with care.

With regard to the various operations upon the phrenic nerve that are employed for the purpose of promoting a temporary or permanent unilateral diaphragmatic paralysis—there is some lack of unanimity of opinion with regard to the value of this procedure, and more difference of opinion as to the indications for its use. There is no doubt but that phrenic evulsion has a valuable place in our armamentarium of therapy, and there is no doubt but that in the past the indiscriminate performing of this minor operation in improperly selected cases has led to scepticism in many quarters as to its value. At the Chapin Hospital we have rarely, if ever, employed phrenicectomy in cases where pneumothorax has not been given a trial. The argument has frequently been used that phrenicectomy may save a patient two or three years of pneumothorax treatment and for this reason should be given a trial. In certain cases this is probably true and early lesions may heal and thin-walled cavities may be closed, but I feel the same argument holds here which was mentioned previously—namely, that while we are waiting to see whether or not an imperfect collapse will achieve this end, when we had it in our power to produce a more perfect collapse, the pleurisies, the bronchogenic spreads or other dreaded complications may arise which might have been avoided.

We have felt that phrenicectomy is indicated in cases presenting the following problems:

1. In those cases where pneumothorax is unsatisfactory, and especially in this group those cases in which the lung is adherent to the diaphragm or where the lung is held out by band-like adhesions with a diaphragmatic attachment. Elevation of the diaphragm in such cases will tend to promote a more complete collapse, although pneumolysis may be more effective in certain types of adhesions, and fixation of the diaphragm may limit the degree of compression in others.
2. In those cases where the possibility of thoracoplasty is being entertained. This may include cases where pneumothorax is impossible because of adhesions or cases where there is a partial pneumothorax. The resulting benefit of phrenicectomy in a certain number of these cases may render later thoracoplasty unnecessary—and where the more radical operation is indicated the added compression minimizes the danger of spread and will also render less the amount of rib resection. In addition it may also act as a functional test operation in this group of cases.
3. Basalar lesions, especially with cavity formation, where the lung is adherent to the diaphragm rendering pneumothorax ineffectual.
4. In cases of pulmonary hemorrhage where it is impossible to give pneumothorax.

We have not employed phrenicectomy in cases with bilateral disease where pneumothorax is being given on the opposite side, although the procedure is possibly warranted when the outlook is rather hopeless and there appears to be no other measures available that will halt the progress of the disease.

One might divide the various maneuvers for achieving collapse therapy into two groups—those of a temporary nature which may be tried and, failing to achieve the desired results, may be recalled, allowing us to begin again on a new line of attack. On the other hand are those procedures which are permanent—phrenicectomy falls into this latter group, and if no useful purpose has been accomplished, the high diaphragm will always remain to remind us that we have one less weapon with which to fight. We should always remember the possibility that at some future time the opposite lung may be our chief concern and the treatment of this lung may be considerably handicapped if we have paralyzed the diaphragm on the opposite side. Phrenic crushing has been substituted and has its



place, but the results are much more inaccurate. Failure is the rule when accessory phrenics are present; in other cases a permanent paralysis is produced and if a temporary paralysis is accomplished the collapse must be maintained until normal function is restored, regardless of the response of the diseased lung to this procedure.

My own conservatism with respect to phrenic nerve operations is based to a certain degree upon the belief that unless the need is great, it is not a sound surgical principle to sacrifice any structure that is performing a useful physiological function. Furthermore, we should not forget that elevation of the diaphragm gives rise to disturbed anatomical relations within the abdomen.

The above observations are not set forth as objections to phrenic nerve operations when justifiable indications exist. They are merely suggestions that cases be chosen with care, and that operations shall not be performed upon cases until their selection has been given very careful consideration, which to a great degree has not been done in the past.

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## SOCIETIES

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### PROVIDENCE MEDICAL ASSOCIATION

The regular monthly meeting of the Providence Medical Association was called to order by the President, Dr. Charles F. Gornly, Monday evening, June 4, 1934, at 8:50 o'clock.

The records of the last meeting were read and approved. The Secretary announced for the golf committee that members could attend the dinner even if not players, that there would be prizes for non-players, and all were urged to send in their acceptances promptly. A letter was read from the State Public Health Commission, stating that for reasons of economy they were planning to give up the examinations of urine. Dr. Round explained the matter. It was voted that the association approved this contemplated action. It was announced that the Standing Committee had appointed a committee consisting of the President, Secretary of Public Relations Committee, and Secretary, to arrange an open forum on October 8 to discuss medical economics and other associated matters. The Standing Committee also recommended that the President appoint a committee to consider im-

provements in the meeting hall, and it was voted that the President appoint such a committee of not more than five members.

Dr. Myer Asekoff reported a case of Alzheimers Disease or pre-senile dementia.

Dr. Julius G. Kelley read the first paper of the evening on "Spondylitis." This summarized the conclusions reached at Tucson, Arizona, where many arthritic persons go for treatment. There they divide the cases by a clinical classification into six groups and these were carefully outlined by the speaker. Dr. Horan discussed the paper.

The second paper, by Dr. Walter Bauer of the Harvard Medical School and Massachusetts General Hospital, was on "The Differential Diagnosis of Rheumatoid Arthritis."

This speaker felt that cases could be divided roughly into two types: the degenerative and the proliferative. He showed a series of excellent slides illustrating the common lesions and reported a number of cases of gonorrheal arthritis and gout. Drs. Henry McCusker and Bauer discussed the paper.

Although both of these papers evidenced enthusiastic, scholarly work by their writers, they could have each been cut down to half their length without sacrificing any essential value, and the meeting would not have extended to the ridiculously late hour of 11:30 P. M.

Attendance 120. Collation was served.

Respectfully submitted,

PETER PINEO CHASE,  
*Secretary*

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## REPORTS OF COMMITTEES

*(Continued from the July issue)*

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### THE RHODE ISLAND MEDICAL SOCIETY

In the absence of the chairman of the Committee on Survey of Maternal Obstetrical Deaths, the following report was read by the Secretary, and it was voted to accept the report and continue the Committee:

#### REPORT OF

#### COMMITTEE ON MATERNAL MORTALITY

The committee to make a five year study of maternal mortality in Rhode Island continued its work during 1933.



During the past three years two hundred cases have been investigated—fifty-seven in 1931, sixty-nine in 1932 and seventy-four in 1933. The increase in the number of cases investigated each succeeding year is not an indication of a corresponding increase in the maternal mortality rate, but rather an indication of more complete death returns and a more thorough investigation of deaths associated with pregnancy and labour. During the first year of the survey only such cases were investigated as were officially listed as puerperal deaths. Each succeeding year there have been a larger number of investigations of cases in which the cause of death was non-puerperal but was associated with pregnancy or labour. These cases, while not strictly puerperal deaths, are important because when properly studied they may furnish indications for treatment of the more serious complications of pregnancy.

I wish to again acknowledge the debt which the Society owes to Dr. Goldberger for the time which he has put into investigating these cases and the tact and intelligence with which the investigations have been made.

The committee asks that it be continued another year.

Respectfully submitted,

EDWARD S. BRACKETT, M.D.,  
*Chairman*

#### REPORT OF THE BOARD OF TRUSTEES OF THE RHODE ISLAND MEDICAL LIBRARY BUILDING

As the Chairman of the Board of Trustees of the Rhode Island Medical Society Library Building, I beg leave to submit the following report covering the past year:

The lawn around the building has been seeded during the seasons of 1933 and 1934. In the Fall of 1933 the vestibule and lower hallway were painted. The bookcase in the Reading Room has been rebuilt to conform to the other shelves and to allow more adequate space for reference books. There have been minor repairs to the heating system. Permission was given for hanging in the Library building a portrait of the late Clarence T. Gardner. There have been no formal meetings of the Committee as a whole.

Respectfully submitted,

ROLAND HAMMOND, M.D.

#### ANNUAL REPORT OF THE LEGISLATIVE COMMITTEE OF THE RHODE ISLAND MEDICAL SOCIETY

##### *Public Health Legislation, 1934*

The following health measures were passed by the State Legislature:

Senate Bill No. 56, an Act to vacate the forfeiture and revive the Charter of Broadway Hospital.

Senate Bill No. 123Am., an Act relating to narcotic drugs and to make uniform the law with reference thereto, being in amendment and repeal of certain sections of Chapter 158 of the General Laws, entitled "Of the sale and distribution of certain narcotic drugs," as amended by Chapters 793, 1024, 1236, 1419, 1567, 1794, and 1948 of the Public Laws, passed respectively in 1926, 1927, 1928, 1929, 1930, 1931, and 1932.

Senate Bill No. 178, an Act in amendment of Section 6 of Chapter 1749 of the Public Laws, 1931, entitled "An Act for the promotion of public health and sanitation at camps, camp grounds, bath houses, bathing beaches and amusement resorts."

Senate Bill No. 224, an Act in amendment of Chapter 1405 of the Public Laws of 1916, entitled "An Act authorizing the City Council of the City of Providence to appropriate and pay annually to the Providence District Nursing Association such sum of money as the City Council of said City may deem expedient," and Chapter 687 of the Public Laws of 1925, in amendment thereof.

Senate Bill No. 252, an Act to validate certain appropriations made by the town of Bristol at a financial town meeting held March 19, 1934, and authorizing said town to make certain appropriations hereafter.

House Bill No. 536, an Act relating to the Division of Child Hygiene maintained under authority of the State Public Health Commission.

House Bill No. 663, an Act authorizing the town of Jamestown to make an annual appropriation to promote public health and nursing service in said town.

House Bill No. 707, an Act in amendment of Chapter 1571 of the Public Laws passed at the January Session, A. D. 1917, entitled "An Act authorizing the City Council of the City of Cranston to appropriate and pay annually to any incorporated anti-tuberculosis or district nursing association or other corporation engaged in social welfare work, located and performing their work in the City of Cranston, such sums of money as the City Council

of said City may deem expedient," as amended by Chapter 707 of the Public Laws passed at the January Session, A.D. 1925, and as further amended by Chapter 895 of the Public Laws, passed at the January Session, A. D. 1926.

House Bill No. 799A, Resolution making an appropriation for the purpose of repairing the prison chapel damaged by fire at the State Institutions.

House Bill No. 810, Resolution making an additional appropriation for the State Sanatorium to be expended during the fiscal year ending June 30, 1935.

House Bill No. 818, an Act in amendment of Section 3 of Chapter 79 of the General Laws, entitled "Of the rehabilitation and education of injured and crippled."

House Bill No. 835, an Act in amendment of and in addition to Chapter 169 of the General Laws, entitled "Of the regulation and practice of dentistry," as amended.

House Bill No. 884A, an Act authorizing the City of Pawtucket to make an annual appropriation to promote public health and nursing service in said City.

The following Bill was left in House Labor Legislation Committee:

House Bill No. 736, an Act in amendment of and in addition to Article 2 of Chapter 92 of the General Laws, entitled "Of payments to employees for personal injuries received in the course of their employment, and of the prevention of such injuries." This proposes to amend the workmen's Compensation Act by providing compensation for disabilities resulting from certain occupational diseases named in the bill.

Senate bill 123Am., Chapter 2096: Three-quarters of the original Narcotic Act with its amendment has been re-written and amended, thereby greatly strengthening the power of the State Narcotic Board by defining more clearly by whom and how narcotics shall be administered. A copy of this Act accompanies this report.

Senate bill 178, Chapter 2124: This Act allows the General Assembly to vote an extra appropriation. This money to be expended by the Public Health Commission. Vouchers for this money shall be furnished by two members of the Commission, or the Chairman of the Commission and the Director of Public Health.

Senate bill 224, Chapter 2134: This Act limits the appropriation \$10,000.

Senate bill 252, Chapter 2141: This Act applies to a \$7500. appropriation, a part of this money to be used in the Town of Bristol for work of the American Red Cross, the Colt Memorial Ambulance Service and the District Nursing Association.

House bill 536, Chapter 2125: This Act gives added help to the Town of East Providence for Child Hygiene work.

House bill 663, Chapter 2159: Appropriates \$2000 to be expended by the American Red Cross.

House bill 707, Chapter 2152: This appropriates a sum not exceeding \$7500. got any one year.

House bill 810, Chapter 74: Appropriates \$350. for further repairs and alterations.

House bill 818, Chapter : This Act allows the General Assembly to appropriate annually such sums as it may deem sufficient and advisable for carrying on this work, through vouchers signed by the Commissioner of Education.

House bill 835 Chapter : This Act defines the organization of the Board of Dentistry. It also regulates the practice of dentistry, and defines by whom this profession shall be practiced in the State. It allows the Board in its discretion after hearings to revoke or suspend registrations and certificate of persons deemed guilty of using fraudulent or misleading advertisements such as are defined in the Act. The Board may also suspend a license of a person found guilty of dishonorable or grossly unprofessional conduct.

House bill 884A, Chapter 2164: This Act makes annual appropriation not exceeding \$2500. to be expended in promoting public health and nursing service under supervision of the Pawtucket and Central Falls Chapter American Red Cross.

Respectfully submitted,

HERBERT E. HARRIS,  
*Chairman.*

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#### REPORT OF THE MEDICAL EMERGENCY RELIEF COMMITTEE OF THE R. I. STATE MEDICAL SOCIETY

Your committee wishes to report that it has successfully completed the first phase of its work. It has developed and put into operation a state program of Medical Relief under F.E.R.A. Rules and Regulations No. 7.

The plan as drawn up by your committee was submitted to and accepted by the House of Delegates of the R. I. Medical Society at its last regular

meeting. It received the approval of the State Emergency Relief Administration of R. I. Under this accepted plan it is essential for each constituent district society to adopt a local plan for submission to and approval by the State Emergency Relief Administration. To facilitate the formation and adoption of these local plans by the District Societies, the chairman and secretary of your committee made personal visits to the various District Societies. Their reception was uniformly cordial and the discussion mutually enlightening.

While the operation of this program both on the part of the organized medical profession and the State Emergency Relief Association is permissive and not mandatory all of the District Societies with the exception of the Washington County Society have chosen to take part in it.

Each plan as submitted has been accepted with certain minor exceptions referring largely to the question of a mileage allowance. All mileage allowances were rejected if a part of the plan. The plans are working more or less successfully everywhere with the exception of Woonsocket where the local Relief Administration on April 23rd was ordered to stop issuing authorizations for Medical Relief by Mayor Toupin. As this is a purely local affair that concerns the organized profession and the local relief bureau of Woonsocket the state committee has not as yet taken any official part.

We learn from the National headquarters that recent reports indicate that 46 of the 48 states have programs in operation. We are happy to report that Rhode Island was among the early ones in getting their program in operation.

Finally, as appears in the last paragraph of the State Plan, we recommend continuation of the committee as a professional advisory committee to the State Emergency Relief Administration and that it continue to be known as the "Emergency Relief Committee of the R. I. State Medical Society" to carry on the next phase of this work.

CHARLES F. GORMLEY, *Chairman*  
WM. P. BUFFUM, *Secretary*

It was voted that the Emergency Relief Committee be continued.

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#### COMMITTEE ON EXPERT MEDICAL TESTIMONY

The Committee on Medical Expert Testimony wishes to report that in conjunction with the com-

mittee on the Rhode Island Bar Association has held several meetings resulting in some progress in the matter under consideration. The complexities of medical expert testimony in its various phases render the subject one which cannot be finally reported on until some more time has been devoted to it by your committee. Accordingly the Committee requests that it be continued to a further date.

Respectfully submitted,

CHARLES GORMLY,  
ROLAND HAMMOND,  
JOHN E. DONLEY,  
*Chairman.*

---

#### PHYSICAL THERAPY SESSION TO BE HELD IN PHILADELPHIA

The thirteenth annual scientific and clinical session of the American Congress of Physical Therapy will be held in Philadelphia at the Bellevue Stratford, September 10, 11, 12, 13, 1934.

This year's session will be especially noteworthy because of the excellent program which has been arranged. Outstanding clinicians and teachers will present the results of the newer researches in the field emphasizing short wave therapy, hyperpyrexia, light therapy, remedial exercise, massage and other interesting subjects.

On Wednesday evening, September 12th, a joint session will be held with the Philadelphia County Medical Society.

Special features will be the scientific and technical exhibits and the small group conferences. The latter have been arranged for Tuesday morning. Every specialty of medicine and surgery will be represented. The technical application of physical measures will be demonstrated and the fundamentals emphasized. The general sessions will be taken up with symposia on cancer, arthritis, poliomyelitis, industrial surgery, etc.

Friday, September 14, has been set aside for hospital teaching clinics which will be held in the leading institutions of Philadelphia.

You should plan now to attend this very important medical gathering. Physicians and their technicians, properly vouched for, are eligible to attend.

Send for preliminary program. Address American Congress of Physical Therapy, 30 North Michigan Avenue, Chicago, Illinois.

*Further Committee Reports continued  
in a future issue.*



MONTHLY REPORT OF HEALTH DE-  
PARTMENT ACTIVITIES, PROVI-  
DENCE, R. I., JUNE, 1934

The marriages for June, 1934, were 330 as against 115 for May, 1934, and 209 for June, 1933. There were 100 cases of measles reported as against 6 for June, 1933. The last outbreak of measles occurred in 1931-32. The present outbreak is quite limited so far. Toxoid treatments for diphtheria are being discontinued because of some unpleasant reactions and toxin-antitoxin is being substituted. Alum-toxoid treatments are at present on trial.

VITAL STATISTICS\*

	1934 June	1933 June
Deaths, all	249	224
Deaths under 1	24	30
Deaths over 70	87	52
Births	409	387
Marriages	330	209
Infant Mortality	58	77
Death rate	11.98	10.78
Birth rate	19.67	18.61

Principal Causes

1. Heart Disease	51
2. Cancer	34
3. Pneumonia	11
4. Nephritis	20
5. Cerebral Hemorrhage	30
6. Auto Accidents	4

Laboratory Examinations

Charles V. Chapin Hospital	1,454	1,685
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Milk Department

No. Samples Tested	1,506	1,613
No. Licenses Issued	341	101

Physicians

No. Visits to Sick Poor	324	770
Medical Inspection	54	32

Diphtheria Immunization

	1934 June	1933 June
No. Schick Tests	22	42
No. T-At Treatments	319	957
No. Toxoid Treatments	145	137
No. Alum-Toxoid Treatments	11	

Smallpox Immunization

No. Vaccinated	292	331
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Inspectors

Food Insp. Visits to Restaurants	253	743	416
Food Insp. Visits to Stores	260		
Food Insp. Visits to Saloons	160		
Food Insp. Visits to Class D Clubs	70		
No. Saloon Licenses approved	1		
No. Victualling Licenses approved	5		
Peddlers Approved	37		
Sunday Sales Licenses	16		
Sanitary Insp. No. Visits	229		156

Nursing Visits

Communicable Disease Nurses	1,325	1,382
Child Hygiene Nurses	1,742	2,493
Parochial School Nurses	950	1,739

Child Health Stations

Visits by children	1,340
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CONTAGIOUS DISEASES

	Cases			Deaths		
	1934 June	1933 June	1934 May	1934 June	1933 June	1934 May
Scarlet Fever	24	37	52	1	0	1
Diphtheria	2	5	3	0	0	0
Whooping Cough	141	129	68	0	2	0
Measles	100	6	29	0	0	0
Tuberculosis	6		10	10	8	8
Typhoid Fever	1	0	1	1	0	1
Septic Sore Throat	1	0	3	0		2

\*Includes non-residents.

DENNETT L. RICHARDSON, M.D.,  
Superintendent of Health

NOTICE

THE AMERICAN COLLEGE  
OF PHYSICIANS

will meet in

PHILADELPHIA, 1935

The American College of Physicians will hold its Nineteenth Annual Clinical Session in Philadelphia, April 29-May 3, 1935.

Announcement of these dates is made particularly with a view not only of apprising physicians generally of the meeting, but also to prevent conflicting dates with other societies that are now arranging their 1935 meetings.

Dr. Jonathan C. Meakins, of Montreal, Que., is President of the American College of Physicians, and will arrange the Program of General Sessions. Dr. Alfred Stengel, Vice President in Charge of Medical Affairs of the University of Pennsylvania, has been appointed General Chairman of local arrangements, and will be in charge of the Program of Clinics. Mr. E. R. Loveland, Executive Secretary, 133-135 S. 36th Street, Philadelphia, Pa., is in charge of general and business arrangements, and may be addressed concerning any feature of the forthcoming Session.

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# THE RHODE ISLAND MEDICAL JOURNAL



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ENTERED AS SECOND-CLASS MATTER AT THE POST OFFICE AT PROVIDENCE, R. I., UNDER ACT OF MARCH 3, 1879

## Loose Stools in Infants

require extra diapering, and inconvenience the mother

Clinically, loose stools are accompanied by a dehydration which, when excessive or long continued, interferes with the baby's normal gain. A long-continued depletion of water is serious, since "the fluid requirements of an infant are tremendous. A normal infant 15 pounds in weight will frequently excrete as much as one litre of urine per day. A negative water balance for more than a very short period is incompatible with life." (Brown and Tisdall)

Moreover, when the condition is superimposed by chance infection, the delicate balance may be seriously upset, since the infant's reserves have already been drawn upon, so that resistance to infection and dangerous forms of diarrhea may be too low for safety. Every physician dreads diarrhea, which Holt and McIntosh call "the commonest ailment of infants in the summer months."

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## ORIGINAL ARTICLES

### THE IMPORTANCE OF EARLY DIAGNOSIS IN UROLOGY\*

MIHRAN A. CHAPIAN, M.D.

158 BROADWAY  
PROVIDENCE, R. I.

The importance of early discovery of urologic pathology cannot be overemphasized. Urology, as it is practiced today, offers such diagnostic methods of precision that practically in all cases the underlying pathology can be ascertained with reasonable certainty. However, in spite of this fact, many patients are deprived of the benefit of these diagnostic means and have frequently been subjected to operative procedures without symptomatic relief. Carson<sup>1</sup> stated significantly that in over 1200 autopsies performed at the University Hospital, Baltimore, the most frequent site for clinically undiagnosed lesions was the genito-urinary tract.

The cause of failure to diagnose disease or anomaly of the urinary tract is principally due to the fact that the indications for a urologic survey are frequently not recognized; on the other hand, not a few physicians still look upon cystoscopy with disfavor and are quite unwilling to subject their patients to a supposedly dreadful procedure.

The first subjective symptom of urinary disease, in the majority of cases, is disturbance in the act of micturition. This disturbance is manifested by increased frequency, burning, urgency, dysuria, tenesmus and incontinence, singly or in various combinations. When a patient presents himself with a definite history of such disturbances, obviously, the physician's attention immediately centers about the genito-urinary tract. However, it is important to note that such subjective evidence of urinary tract pathology is not infrequently lacking and instead, indefinite pains or aches, or certain abnormal findings in the urine, such as blood or pus, are the only diagnostic guides available. It is in this type of

cases that usual errors in diagnosis are made and the underlying pathological process is allowed to progress.

The purpose of this paper is, therefore, to call attention to a large number of cases in which disturbances in the act of micturition are either absent or slight and the outstanding symptom is pain—not directly referable to urinary tract, hematuria or pyuria.

*Pain:* Pain due to urinary disease is variable in character. When it begins in the lumbar region and radiates forward and downward to the inner side of the thigh, or the testis, one quite naturally suspects the urinary tract as the source of trouble; but more often than not, pain of urinary disease is not so well defined, and the variability of its location, intensity and duration, particularly when associated with certain gastro-intestinal symptoms, is often confusing. Yet, it is common knowledge that abdominal pain associated with distress after meals, nausea, vomiting or gaseous eructations, is not always due to disease of the digestive tract, and that not infrequently, these symptoms are reflex manifestations of a pathological lesion in the upper urinary tract. As the nerve supply of the kidney, the ureter and the gastro-intestinal tract has a sympathetic derivation, the occurrence of these reflex phenomena can readily be explained. Consequently, a correct diagnosis in the absence of a definite localization of pain, can only be arrived at by a process of elimination. In a case presenting vague abdominal pains and digestive symptoms, a study of the gastro-intestinal tract and the gall bladder would be the first order of procedure; however, in the absence of positive findings, it should be considered good judgment to subject the patient to a complete urological examination.

A statistical study from various clinics shows that urinary disease is frequently mistaken for surgical disease of the abdomen, particularly chronic appendicitis. Lowsley and Twinem<sup>2</sup> reported 84 cases which were treated surgically or medically for pathological conditions supposedly other than those of the urinary tract without relief of symptoms; subsequent urologic study showed all of them suffering from definite diseases and anomalies of the

\*Read before the Pawtucket Medical Association, May 17, 1934.

kidney or ureter. Of these 84 cases, 31 patients were previously operated upon for chronic appendicitis, 3 patients had appendectomy and cholecystectomy, 5 patients had salpingectomy and oophorectomy, 10 patients were advised to have the appendix removed but refused and 34 patients were treated medically. All of these patients were subsequently cured or relieved by appropriate urologic procedures. Beck<sup>1</sup> of Baltimore reported 284 urologic cases in which the major symptoms were referable to other parts of the body, the gastro-intestinal symptoms predominating. In this series, 207 operations were performed prior to urologic study; of this number, 137 were abdominal and pelvic operations.

The experience of these investigators and of many others has conclusively demonstrated the value of urologic study in all doubtful cases.

There is, however, a counterpart to this discussion and that is the possibility of mistaking other surgical diseases of the abdomen for disease of the urinary tract. I hope we are all aware of the dangerous possibilities of appendicitis; at times, it is extremely difficult to differentiate between appendicitis and ureteral stricture or calculus. Also, it is possible to mistake intestinal obstruction, when the pain is colicky in nature, to stone in the urinary tract.

*Hematuria:* Hematuria, gross or microscopic, is a danger signal. This fact should be forcefully driven home whenever there is a discussion relative to urologic diagnosis. Although the profession as a whole is cognizant of the potential dangers of this symptom, unfortunately, not a few practitioners still revert to pre-cystoscopic days and treat their patients with urinary antiseptics and when the blood temporarily disappears from the urine, as it usually does, congratulate themselves for the efficacy of such treatment. We believe the painlessness of most hematurias and their character of intermittency have been the two principal causes of complacency on the part of both the patient and the physician.

The source of bleeding can often be approximately determined by correlating the accompanying signs and symptoms. Systemic causes of hematuria, such as hemophilia, purpura hemorrhagica, leukemia, Hodgkin's Disease, or hematuria due to high protein diet, physical exertion and ingestion of drugs should be kept in mind. Blood in the urine due to acute infections of the lower urogenital tract,

such as gonorrhea and its complications, or that due to prostatic hypertrophy or carcinoma, is usually associated with disturbances of micturition and can easily be accounted for. Hematuria when accompanied by colicky pains in the lumbar region or abdomen usually calls attention to the kidney or ureter. When bleeding occurs at the beginning of urination, it indicates a urethral origin. Terminal hematuria may mean acute inflammation, enlarged prostate or new growth at or about the vesical orifice.

As a preliminary procedure, the three glass test or preferably the Wolbarst five glass catheter test will give valuable information as to the source of bleeding provided it is not profuse. When bleeding appears to be in the anterior urethra, the urethroscope, and when in the posterior urethra, the cystourethroscope, will determine the character of the underlying lesion. In acute inflammatory conditions, however, neither instrument should be used. When the urinary tract proper is suspected as the source of hematuria, a preliminary X-ray examination should be made, followed by cystoscopy, ureteral catheterization, differential function tests, and finally pyelography and ureterography. The cystoscopic examination should be carried out, if possible, before the bleeding ceases, as it would be easier to determine its location, particularly in those cases where the underlying pathological lesion is not pronounced.

With the employment of modern instruments, it is seldom that the urologist is at a loss as to the actual source of bleeding. Thomas<sup>2</sup> investigated 430 patients with hematuria, not due to gonorrhea or trauma, and found that in only 2.5 per cent the cause could not be determined. It is not surprising, therefore, that one hears less and less about "essential hematuria."

The pathological lesions of the urinary tract causing hematuria are many and varied; the most common findings, however, are tumor, calculus and tuberculosis.

Chute<sup>3</sup> analyzed 100 cases of hematuria in 1920 and found 64 per cent of them due to a growth in the prostate, bladder or the kidney. Investigating another 100 cases in 1924, he found that 14 per cent of the bleeding originated in the prostate, 46 per cent in the bladder and 40 per cent in the kidney. In this series, malignancy was responsible for 30 per cent of the prostatic, 75 per cent of the vesical and 12 per cent of the renal bleeding. This



investigation confirms the common observation that the most frequent site for carcinoma is first the bladder, second the prostate and third the kidney.

It is estimated that about 15% of all prostates causing urinary obstruction are malignant. Therefore, a routine rectal examination in all male patients over fifty years of age will contribute in large measure to the early discovery of this serious lesion.

In 902 epithelial tumors of the bladder studied recently by the Committee on Carcinoma Registry of the American Urological Association,<sup>5</sup> hematuria was the initial symptom in 63.52 per cent. As not a small number of bladder carcinomata begin in the form of papillomata, the early detection of blood in the urine and cystoscopy, followed by simple fulguration of the tumor, will materially enhance the chances for permanent cure.

Eisendrath and Rolnick<sup>6</sup> state that hematuria is the initial symptom in over 60 per cent of renal tumors, except in children in whom a tumor mass is the most common initial finding. In the absence of other pathological lesions of the urinary tract, the possibility of kidney tumor should be considered and pyelographic studies made before metastasis takes place and a palpable mass is present.

*Pyuria:* Pyuria or pus in the urine is an important finding. As it is frequently the only symptom, the urine of every patient presenting himself for a general physical examination should be carefully examined.

Pyuria may be due to a primary infection in the urinary tract or it may be secondary to calculus, tumor, foreign body, stricture, obstruction at the bladder neck or retention of neuromuscular origin. Often one's attention is directed to the source of pus by certain associated factors. For example, a history of recent exposure and presence of discharge at the meatus as a rule means a urethral infection. The nature of this infection should be determined by a microscopic examination of the stained specimen, as, it is needless to say, a urethral discharge may not be gonorrheal.

In pyuria as in hematuria the three glass test or the five glass catheter test is of considerable value. In the presence of chronic infections of the urethra and its adnexa, endoscopic examinations will frequently reveal pathology in and around the verumontanum. If the origin of pus is in the urinary tract proper, cystoscopy, supplemented by ureteral catheterization, functional tests, pyelography and ureterography will establish the diagnosis.

In the female, the urine should be obtained by catheterization, as voided urine being frequently mixed with discharges from the genital tract, cannot be relied upon.

Pyuria when accompanied by increased frequency, burning, dysuria, or urgency is frequently attributed to a simple cystitis and the patient is often treated for months with urinary antiseptics and bladder lavage. There is no justification for this presumption. We have already mentioned the multiplicity of lesions in the bladder, ureter and kidney frequently causing a secondary infection of the bladder, with the production of pus and disturbance of urination. Furthermore, a simple cystitis is an uncommon occurrence. By far the large proportion of cases of cystitis are secondary to a descending infection from the upper urinary tract. If this fact is borne in mind, there will be less delay in subjecting the patient to a cystoscopic examination.

The possibility of renal tuberculosis in the presence of pus or blood and persistently progressive frequency or dysuria, particularly in young adults, should be strongly suspected. Occasionally, pyuria or hematuria is the only presenting symptom. Also the urine from a case of renal tuberculosis is usually acid in reaction, sterile on culture and contains tubercle bacilli in addition to pus or blood. One must also remember that urinary tuberculosis is secondary to tuberculous foci elsewhere in the body, and that a tuberculous cystitis is always secondary to renal tuberculosis except in a very small number of cases where bladder involvement follows an ascending infection from genital tuberculosis. Here again the final diagnosis is arrived at by cystoscopy, ureteral catheterization, functional tests and pyelo-ureterography.

Pyuria and hematuria require special emphasis in children. Contrary to a general impression, practically all the urological lesions found in adults up to the age of fifty are also found in children. Sixty-two children with urinary symptoms studied by Thomas and Birdsall<sup>7</sup> showed a variety of pathological conditions, such as pyelitis, pyelonephritis, hydronephrosis, pyonephrosis, calculi, bladder diverticula and enlarged verumontanum with granulations. Bugbee and Woolstein<sup>8</sup> reviewed 4,903 necropsies in infants in the Babies' Hospital in New York and found 117 anomalies of the urinary tract, in almost all of them there was interference with the urinary drainage.

Pyelitis is the most common urological finding in children, girls being particularly susceptible to this type of infection. The treatment of pyelitis is admittedly medical, practically all cases clear up with increased intake of fluids, alkalies and urinary antiseptics. However, if a case of pyelitis does not clear up under this regimen, the possibility of an associated lesion should be seriously considered. These lesions are either obstructive, such as stricture, calculus or congenital valves of the urethra, or destructive, such as pyelonephritis, pyonephrosis or tuberculosis. The timely discovery of these lesions can only be made by carrying out in these little patients precisely the same urologic investigation as in the adult. Under general anesthesia and with the employment of instruments especially designed for children, these investigations can be carried out satisfactorily even in very young infants.

Enuresis in children not infrequently is due to a pathological lesion in the urinary tract. Thomas and Birdsall<sup>7</sup> subjected 12 patients with nocturnal enuresis to urologic study. In two cases, they found such lesions as hydronephrosis, hydroureter and diverticulum of the bladder, nine cases showed hypertrophy of the verumontanum with granulations and one case showed a polypoid growth of the verumontanum. Campbell<sup>9</sup> made complete urological studies in 249 children, four years of age or older; previously the diagnosis of enuresis was made in all of them and various modes of therapy were employed without avail; it is illuminating to note that urinary tract pathology accounted for the symptoms in 60 per cent of this series. Consequently in cases of enuresis with abnormal findings in the urine, also in cases that do not respond to recognized therapeutic measures, a complete urologic study is likely to reveal a pathological lesion.

#### SUMMARY

Urology with the aid of the modern cystoscope and the X-ray offers an exceptional opportunity for early diagnosis.

Pain not directly referable to urinary tract may originate from a pathological lesion in that tract, and calls for urologic study, particularly before abdominal operations.

Hematuria and pyuria are warning signals and should immediately be investigated by all the diagnostic procedures at our disposal when such serious diseases as stone, cancer and tuberculosis are within the sphere of curability.

The same diagnostic procedures are applicable in children as in adults and should fully be utilized, particularly in cases of cystitis, pyelitis and enuresis when accepted therapeutic measures prove unsuccessful.

The following cases illustrate briefly some of the salient points brought out in this paper:

CASE 1: J. B., male, age 22. Complained of increased frequency, dysuria and occasional pain in the right lumbar region for the past three years. Had noticed blood in his urine four times during this period. Had been treated for cystitis on and off. When first seen, he was voiding every 15-20 minutes and suffering great pain; urine was cloudy and loaded with pus and blood cells; considerable tenderness present over the right costovertebral angle. Urologic study showed numerous dense shadows in the right kidney and a large circular shadow about one inch in diameter in the bladder. The bladder stone was removed by suprapubic cystotomy and right nephrectomy done 26 days later.

This was a badly neglected case and was treated for simple cystitis without the benefit of a urological examination.

CASE 2: N. C., male, age 27. Contracted gonorrhea five years previously. Had been treated by urethral injections and prostatic massage, on and off, up to six months ago. Worked every day and felt well. Wanted to know if it was all right for him to marry.

Examination showed three glass test uniformly cloudy. Rectal examination revealed a small prostate with scattered areas of fibrosis. Prostatic fluid showed 10-12 W.B.C. per H.P.F. A No. 28 F. sound introduced without difficulty. Cystoscopy showed purulent urine coming in jets from the right ureteric orifice. Pyelography revealed a non-functioning calculous pyonephrosis on the right side.

A painless pyuria was the only symptom in this case. Also, this case shows the importance of detecting upper urinary tract pathology in the presence of chronic gonorrhea or a history of gonorrhea.

CASE 3: M. M., female, age 30. Complained of palpitation and occasional pain in the epigastrium and left chest, also loss of appetite and strength for the past five years. Medicines prescribed by her doctor did not help. Has had no urinary symptoms. The examination of the chest was negative. There was slight tenderness over the left costo-vertebral



angle. Urine contained numerous pus and blood cells. Complete urological examination showed a normal kidney and ureter on the right side and a calculous pyonephrosis on the left. Nephrectomy was followed by complete recovery.

In this case, the symptoms were referred to parts other than the urinary tract.

CASE 4: S. D., male, age 42. Complained of weakness. Was under treatment at the Out-Patient Department for late syphilis. Examination of the urine showed numerous pus cells. Plain X-ray examination revealed a large branching calculus and two smaller calculi over the right kidney region. Pyelography completed the diagnosis of right calculous pyonephrosis which called for nephrectomy. This was carried out after a preliminary rest and tonic treatment.

This case also shows an extensive destruction of the kidney manifested by a painless pyuria.

CASE 5: R. T., female, age 33. Has had pain in the abdomen for six years. Pain always started on the left side and radiated forward to the entire abdomen. These attacks occurred about twice a month, were always accompanied by belching, nausea and vomiting, lasted from one to several hours and left her weak for three to four days. Has had no urinary symptoms. Was treated for "stomach trouble" by her doctor. The appendix was removed four years ago on the advice of an internist, the wound became infected and a ventral hernia resulted. However, appendectomy did not relieve her symptoms. Examination showed moderate tenderness over the left costo-vertebral angle. The urine was cloudy and showed numerous pus cells. A complete urological examination showed a normal kidney on the right side and a pyonephrosis with greatly diminished function on the left. Left nephrectomy resulted in complete cure.

In this case, the predominance of gastric symptoms was responsible for a mistaken diagnosis.

CASE 6: A. R., male, age 42. Had a severe attack of pain in the right lumbar region which ceased spontaneously at the end of one hour. On noticing blood in his urine, he called the family physician, who referred him for urologic study. Past history was negative except that he had an occasional dull ache in the back for about a year. Physical examination was essentially negative. Urine showed microscopic blood. Cystoscopy revealed a normal bladder. Phenolsulphonephthalein appeared in four

minutes from the left side; there was no evidence of the dye in fifteen minutes from the right side. Pyelography showed a normal kidney on the left side and a very large hydronephrotic sac on the right.

This case illustrates the value of subjecting every patient with an initial attack of pain or hematuria to a complete urological examination, as one is unable to determine the extent of pathology by the severity or duration of the symptoms alone.

CASE 7: M. V., female, age 24. Complained of increased frequency and dysuria. A short course of bladder lavage did not relieve her symptoms, whereupon she was referred for cystoscopic examination by the attending physician. Urine showed microscopic pus and blood. Cystoscopic examination revealed a benign-looking cyst, the size of a small egg and having a short and broad pedicle, situated immediately below the right ureteric orifice and impinging upon the bladder neck. Both ureters were catheterized easily. Pyelography showed normal pelves and calices on both sides. This cystic mass was fulgurated three times at twelve-day intervals and disappeared completely with cessation of all her symptoms.

This case proves the value of cystoscopy in women with bladder symptoms who do not promptly respond to ordinary treatment.

CASE 8: V. L., female, age 9. This patient has been in the habit of wetting her bed since she was five years old. During the past year, she had marked frequency of urination and also wet herself during the day. Mother consulted two doctors who told her that she will be all right as she grows older. On noticing blood stains on patient's underwear, she consulted another physician, who promptly referred her for cystoscopy. Examination of the urine showed a large amount of pus. After a few preliminary bladder irrigations and administration of an antiseptic, her symptoms somewhat subsided and she was subjected to a complete urological examination. 1/12 gr. of morphine sulphate was given subcutaneously a half hour before the examination, this was followed in 20 minutes by instillation of 10 cc of 2 per cent novocain into the bladder. Cystoscopy revealed a chronically inflamed bladder. Pyelography showed no pathology in the upper urinary tract. Subsequent treatment for cystitis resulted in complete recovery.

I present this case, first, because this child went through all the steps of the examination without a



complaint, and second, because a diagnosis of enuresis was made by two physicians without an examination of the urine.

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### SOME MEDICAL ASPECTS IN THE TREATMENT OF PULMONARY TUBERCULOSIS\*

U. E. ZAMBARANO, M.D.

546 DOUGLAS AVE.  
PROVIDENCE, R. I.

A great clinician once said, "The worst that could happen to a consumptive, is to become tuberculous." When we see the number of patients with advanced tuberculosis presenting themselves for treatment, we wonder if such a statement did not bear some measure of truth even to-day. Every hopelessly advanced case was at some time during the course of his disease, eligible for curative treatment. The most outstanding and often little known cures occur in early cases. Fortunately some of them heal spontaneously and, still more fortunately, some are diagnosed in the minimal stage of the disease, so that effective treatment is promptly instituted. It seems, therefore, that the best treatment, as far as the patient is concerned, is to diag-

nose and treat his tuberculosis at the earliest possible moment.

The diagnosis of tuberculosis is the physicians' responsibility and it is our duty to awaken in the patients and parents their sense of responsibility in seeking medical advice at the first indication of ill health. We cannot, with our present knowledge, hastily pass judgment as to whether disease is present or absent by a mere cursory physical examination or by deducing that tuberculosis does not exist because the individual looks healthy and presents no positive physical signs. The exclusion of early tuberculosis is not always a simple matter and since there are no symptoms, subjectively or objectively, pathognomonic of early tuberculosis, we must make full use of all the diagnostic measures at our disposal.

The history must be painstakingly recorded, inquiring carefully for a long forgotten hemoptysis, an antecedent pleurisy with effusion, the presence of tuberculosis in some members of the family probably long since dead, continued exposure to tuberculosis in the family or among associates or friends. An unusually prolonged attack of so-called "influenza" sometimes turns out to be a chronic pulmonary tuberculosis. These facts will often give us valuable information as to the probable duration of the disease.

The symptoms, languor, malaise, easy fatigue, loss of weight, nervousness and irritability are not peculiar to tuberculosis alone, but their presence warrants a thorough consideration of the disease as a possible causative factor. When the localizing symptoms of cough, expectoration, hemoptysis, pain in the chest and persistent fever become associated with the more general complaints, the disease is probably passed the early stage.

Physical examination in early tuberculosis is most disappointing. In a large percentage of cases, abnormal physical signs are absent and the realization of this fact has been a severe jolt to our diagnostic acumen. It is, nevertheless, true, that in tuberculosis, an extensive involvement may be present in the lungs which is non-detectable and inaudible by physical examination. The presence of coarse rales or amphoric breathing usually indicates that the disease has passed the incipient stage.

A careful examination of the sputum by concentration or animal inoculation is of course essential. A negative sputum is generally the rule in early tuberculosis. A positive sputum invariably means

\*Read before the Providence Medical Association on March 5, 1934.

that tissue destruction and probably cavity formation has taken place.

No examination for tuberculosis, no matter how thorough, is complete without a carefully taken and intelligently interpreted X-ray of the chest. Consideration of the X-ray alone, however, without the other factors often leads us into serious pitfalls. The X-ray tells us the type of lesion we are dealing with; it points out its exact location and extent. Intelligent therapy cannot be carried out without this knowledge. By means of serial X-ray studies we are able to visualize the progress of the lesion and to ascertain the effectiveness of treatment. Many patients with pronounced clinical improvement, show, on X-ray, a definitely progressive lesion. On the other hand, many individuals are diagnosed as tuberculous clinically, and prove to be non-tuberculous after X-ray study.

If these procedures are diligently carried out in every case, diagnostic errors will certainly be greatly minimized and a larger number of patients will be cured.

After the diagnosis has been made, the physician then prepares for the disposal of the case. In many has been found, the patient is sent away to an institution it is literally just that. Once tuberculosis stitution and the incident becomes a closed book. As a matter of fact when tuberculosis is diagnosed, the book has just been opened. The present day management and treatment of tuberculosis should be within the scope of the practicing physician and the extent of his interest in this disease, from every angle, will largely determine the ultimate success of all efforts now being made to stamp out tuberculosis. We were formerly interested in the prevention of the disease; we are now concerned with its eradication as well.

From the standpoint of therapy, prolonged discussion is possible under any of the various methods. The following remarks are intended to briefly point out some of the more practical aspects.

The sanatorium has been responsible, to a very large degree, for the drop in the mortality rate from tuberculosis. Originally intended for the care of early cases, the experience of those in charge of these institutions has been that only a small percentage of their population is admitted in the early stages of the disease. Sanatorium physicians often wonder, therefore, why their patients are not sent to them sooner, so that therapy might be more efficiently given. It is true that many cases are

advanced when first examined, but, on the other hand, some of the early stage cases rest in bed at home while awaiting a vacancy in the sanatorium. When they are called, some of them feel so much improved that they would rather continue the cure where it was started. This does not mean that all cases get well at home and hence the sanatorium is unnecessary. By far the large majority of patients need institutional care and the institution can only accommodate as many as its capacity will allow. Positive sputum cases, advanced cases, and minimal cases with poor home facilities do better in the sanatorium than anywhere else. The selection of cases suitable for home treatment must be made with great caution. The patient with a minimal or moderately advanced lesion without positive sputum, who is intelligent, co-operative and economically situated so that there will be no burden or worry for other members of the family, may under the strict supervision of the attending physician receive treatment at home. Many otherwise favorable cases do not improve in the sanatorium due to psychologic peculiarities and make better progress when they return to more congenial home surroundings. Individuals of this kind are very familiar to the sanatorium authorities and present, in some cases, serious problems in proper management, especially if the patient is a carrier of tubercle bacilli. If every diagnosed case of tuberculosis, minimal or otherwise, were to be hospitalized, the beds now available for this purpose would fall far short of the number required and the consequent cost to the community would reach a burdensome figure in order to make these facilities possible.

The underlying principle in tuberculosis treatment was rest; the more absolute, the better. No time limit was set as to how long rest should be continued and the results obtained were in direct proportion to the extent of the disease when treatment was begun. If the patient became symptom free, had gained considerably in weight and could tolerate a few hours exercise, he was considered as practically cured. Recurrence in many of these cases was very common. In other words the patient was cured of his symptoms, but not of his tuberculosis. To-day we are seeking for, and achieving, in many cases, a more permanent cure, with restoration of the patient to the community, economically independent and capable of supporting himself and his family. We are striving to

make him a full fledged member of society and not a menacing carrier of tubercle bacilli to be shunned by his associates and family. It is common knowledge that our advice to many of the moderate and advanced cases was to go to bed and wait to see what happens. How uncertain, how hazardous and frequently how discouraging. This attitude of letting nature take its course or that there was little else to be done, gradually became the credo of the physician himself. To tell such a patient the same thing to-day, amounts to an admission that the disease is too far advanced and that recovery is problematical. The change from helplessness to hopefulness has been largely brought about by the enforcement of lung rest through the judicious use of collapse therapy. The surgeon has entered upon the scene and his skill, united with the judgment of the internist, has been productive of such striking results, rarely seen in any other disease. Many otherwise incurable patients with cavity formation and positive sputum have been apparently cured. The best results can only come from close cooperation between the medical man and the surgeon; this relationship must always be maintained. I have noticed that in patients receiving collapse therapy, the well-known optimism of the tuberculous becomes more genuine and is no longer just a mental state tinged with mingled doubts and fears.

Rest, therefore, more broadly applied and more definitely instituted, still remains the keystone of modern treatment. After collapse therapy has been started, bed rest must be enforced for varying periods dependent upon the condition of the pulmonary lesion. For a large number of patients receiving pneumothorax therapy and with a negative sputum, sanatorium residence is considerably shortened. Many of them are able to continue resting at home and receive their refills at regular intervals either at the sanatorium, hospital or privately as the case may be. Not a few of them return to their work and carry on collapse therapy at the same time. Bed rest must be enforced until the lesion becomes quiescent and if they are carriers of tubercle bacilli, every provision must be made to prevent spread of infection to others. This can be accomplished through hospitalization or at home if conditions are such that supervision and enforcement of isolation precautions can be effectively carried out.

Bed rest alone has cured many cases of tuberculosis and will continue to do so. The vast major-

ity of minimal cases get well on bed rest alone. The moderately advanced and advanced cases with cavity formation and positive sputum, present the greatest therapeutic problems and it is in this group that collapse therapy has done so much. We have frequently seen lesions of the exudative type involving an entire lobe heal completely by resolution under bed rest. We have also seen similar lesions go on to excavation and rapid dissemination on bed rest. Cavity formation is a serious handicap for any tuberculous patient. There is the ever present danger of hematogenous or bronchogenic dissemination of the disease and the spread of infection to others. Some cavities heal spontaneously, but in the majority of cases unless compression is applied, serious consequences inevitably follow.

The dietary for the tuberculous patient should be well balanced and overstuffing is best avoided. Three meals a day with nourishment in between is usually sufficient. For intestinal, laryngeal or skin tuberculosis special diets are sometimes necessary.

Much has been said about climate in the treatment of tuberculosis. Good results are reported from widely divergent types of climates so that we have come to look upon climatotherapy as not an absolute necessity in the treatment of tuberculosis. Involving as it does a long residence away from home and a large financial outlay, the majority of patients are unable to bear the strain. A change of scene is good for any chronic invalid provided he is economically able to meet the costs with freedom from mental worry.

Heliotherapy is contraindicated in pulmonary tuberculosis. In certain cases of glandular, bone and joint, skin, intestinal and laryngeal tuberculosis, it has proved of great value.

Chemotherapy in tuberculosis has been tried time and time again. The salts of many of the heavy metals have been used but the results were always found wanting. Just now the thiosulphate of gold, known commercially as sanocrysin, is being used rather extensively; more so in Europe than in the United States. Some of the reports in the foreign literature are very glowing and enthusiastic. However, in this country, a few years ago, sanocrysin was given a most impartial trial and very intensive studies were made with suitable controls. The results were published by Amberson, Pinner and MacMahon in the *American Review of Tuberculosis* for October, 1931, and I shall quote from their conclusions:

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FREDERICK N. BROWN, M.D., *Editor*  
309 Olney Street, Providence, R. I.

CREIGHTON W. SKELTON, M.D., *Business Manager*

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## RHODE ISLAND MEDICAL SOCIETY

Meets the first Thursday in September, December, March and June

ALBERT H. MILLER	<i>President</i>	Providence
ROLAND HAMMOND	<i>1st Vice-President</i>	Providence
JOHN E. DONLEY	<i>2nd Vice-President</i>	Providence
J. W. LEECH	<i>Secretary</i>	Providence
J. E. MOWRY	<i>Treasurer</i>	Providence

### DISTRICT SOCIETIES

#### KENT

Meets the second Thursday in each month

DR. JOHN A. MACK	<i>President</i>	West Warwick
DR. L. J. SMITH	<i>Secretary</i>	Buttonwoods

#### NEWPORT

Meets the second Thursday in each month

JOHN RIDLON	<i>President</i>	Newport
ALFRED TARTAGLINO	<i>Secretary</i>	Newport

R. I. Ophthalmological and Otological Society—2d Thursday—October, December, February, April and Annual at call of President.  
Dr. Robert C. O'Neil, President; Dr. N. A. Bolotow, Secretary.

The R. I. Medico-Legal Society—Last Thursday—January, April, June and October, Archibald C. Matteson, President; Dr. Jacob S. Kelley, Secretary-Treasurer.

#### PAWTUCKET

Meets the third Thursday in each month excepting  
July and August

HENRY J. HANLEY	<i>President</i>	Pawtucket
THAD A. KROLICKI	<i>Secretary</i>	Pawtucket

#### PROVIDENCE

Meets the first Monday in each month excepting  
July, August and September

CHARLES F. GORMLY	<i>President</i>	Providence
P. P. CHASE	<i>Secretary</i>	Providence

#### WASHINGTON

Meets the second Wednesday in January, April,  
July and October

E. E. KENYON	<i>President</i>	Kingston
JOHN CHAMPLIN, JR.	<i>Secretary</i>	Westerly

#### WOONSOCKET

Meets the second Thursday in each month excepting  
July and August

W. A. BERNARD	<i>President</i>	Woonsocket
T. S. FLYNN	<i>Secretary</i>	Woonsocket

## EDITORIALS

### TO BE OR NOT TO BE

That is the question. It will be remembered that a few years ago the *New England Journal of Medicine* was founded as a successor to the *Boston Medical and Surgical Journal*. At that time the new publication took over not only the work of its eminent predecessor but also it became the official journal of the State Societies of Vermont and New Hampshire as well as of Massachusetts. Rhode

Island was invited to throw in its lots with its sister state societies, accept representation on the staff of the new organization and, of course, discontinue the publication of this JOURNAL. Sentiment for such a move was apparently completely lacking. Due to the splendid efforts of our able administration and business management our JOURNAL had become one of the largest state medical publications in the country and had been able to make substantial contributions to the State Medical Society. The maintenance of traditional Rhode Island independence appeared to have unanimous approval.

Recently a reconsideration of the question has been mentioned in informal conversations which have come to our ears. Under such circumstances the JOURNAL wishes in a spirit of perfect frankness to put the question up to the members of the State Society. If we should act in accordance with the fashion in contemporary medical writing we would probably present in tabular form the arguments, ranged in opposing columns, for or against such an *Anschluss*. In lieu of such a table let us say that in the column labelled "against" we would place the fact of our independence, our JOURNAL entirely under our own control and a ready medium for the detailed publication of medical communications and society proceedings of local origin, which would of necessity be much curtailed in anything but a local Journal. On the other side of the picture it is a fact that the *New England Journal of Medicine* is one of the greatest medical publications in the country, that it is published weekly, and that it would be of tremendous professional value to Rhode Island practitioners. It is clear that there are two sides to the question. In this latter phase we would have to consider the extreme likelihood of paying the *New England Journal of Medicine* four or five hundred dollars a year, of getting only one Journal a month, of the doing away with all of our exchanges, of getting no books for review (that now go to the Library), of having publication of the transactions of our various societies eliminated, of leaving the option of publication of our "papers" and other material to others and finally of becoming merged as another subsidiary of another Journal.

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### SOCIAL SERVICE

A physician who was always friendly, and glad to aid, in the early days of medical social service, once said: "It is at once the most fascinating and dangerous of the professions." (Our apologies if the quotation is not verbatim. To advise, individually, the method that one should follow, in conducting one's life, certainly is a delicate matter. This, however, is the task that often falls to social workers in general, and more especially to those doing medical social work. Generally speaking, it is well and helpfully done.

The late Sir William Osler in addressing a graduating class of nurses, remarked that it was easy

to learn the language of science, inferring of course that the interpretation of science is quite another matter. This is a fault common to medical social service workers. They speak of "Ca," and "P.A.," and "Type I," or "Equino Varus," or "4+" with the ease which one would expect from a doctor qualified to explain every such term. It is a very minor fault but one which causes many physicians to become somewhat hostile. As an assistant to medical men, social workers should avoid this common failing. They should also bear in mind that the medical profession is largely made up of individuals, whose income depends almost entirely upon personal endeavor, whereas they themselves receive a salary from a corporate origin.

During the last two years, while financial conditions have necessitated the granting of aid by local or federal governments, social workers have been more in evidence than ever, and that they have done an excellent piece of work there is no doubt. They have, in general, resisted political interference better than any other group, they have been essentially level-headed and fair in the interpretation of small incomes, and they have taught many families that some, at least, of their misfortunes, have been due to lack of frugal ways. To literally invade a household, investigate its finances, learn of its savings and losses and pass judgment upon the advisability of aid, has been accomplished with the very minimum of ill-will or friction.

The medical social worker has found and developed a very definite field, and physicians who have seen her work realize its value. To those who have felt that she oversteps her bounds, or that she offers unsound advice as to the solution of medico-social problems, let it be said that her profession is still young, and over-zealousness rather than personal gain is the cause. Her presence is almost fatal to the success of a "quack," for she is strong for the ethical physician, is generally well educated and has a generous amount of common sense. We believe the physician who knows little of the medical social worker, will admire her work more and more on better acquaintance.

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### ARTHRITIS

During the past ten years, an increasing number of papers on arthritis has appeared in the medical literature. Medical conventions have sponsored

symposiums on the subject and arthritic clinics are appearing in one city after another.

Books on arthritis reflect the present-day attitude of those treating the disease,—that of optimism. It is in contrast with the pessimism of the past. The brighter outlook is not an assumed one, for much has been done to arrest and alleviate the suffering that was once considered as a matter of course.

Joints are not permitted to ankylose in faulty positions; muscles are not permitted to become stiff and atrophic. The general system is put into good physiological shape. The mind is kept hopeful and cheerful; pain is treated, and sleep promoted.

Each year sees a larger number of patients completely recovered, and a still greater number returned to usefulness with only slight or inconsequential deformities. Most encouraging is the very active interest on the part of the profession, for it presages added information about arthritis.

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### SOME MEDICAL ASPECTS IN THE TREATMENT OF PULMONARY TUBERCULOSIS

*(Continued from page 150)*

"We discovered no evidence in 12 cases that sanocrysin given in small, gradually increasing doses up to a total of 6.1 gm. has a beneficial effect on pulmonary tuberculosis or its complications.

"Compared with control cases more of our sanocrysin treated cases became worse.

"Sanocrysin exerted definitely harmful systemic effects in all our treated cases partly as a secondary result of its action on the local tuberculous lesions but mostly, we believe, by virtue of its own inherent toxicity. These effects were usually on the nutrition, gastro-intestinal function, temperature, mucous membranes and kidneys.

"One sanocrysin treated patient died from parenchymatous degeneration of the liver and other effects which we interpret as gold poisoning.

"Because of the lack of definite evidence of benefit and because of positive evidence of harm which in some respects is long lasting, especially in the kidneys, the use of sanocrysin as we used it is not justified."

Various other methods of treatment have been reported and are still in use but their results are so

debatable that final discussion is better postponed.

A tremendous amount of work is being done in the prophylaxis of tuberculosis and although disagreement exists as to many details, the consensus of opinion is that it provides our only means for the prevention of infection and disease and its recognition in the earliest stages. It is our duty to see to it that every individual exposed to tuberculosis is examined periodically because, the carrier of tubercle bacilli as long as he remains unaware of his condition, is the fertile source of infection for potential new cases. The carrier may be anywhere, in the home, schools, colleges, medical schools, hospitals, or workshops; in fact, wherever large groups congregate continuously or repeatedly. Knowing this, these examinations are being made throughout the world among known family contacts, school children, college students, interns, nurses, foodhandlers and many others. In some European universities, no student is admitted without previous X-ray of the chest and physical examination. In this way many positive cases have been found which would have been overlooked.

The conduct of these examinations is well within the scope of the private physician and it is within his power to acquaint himself with the procedures involved and in this way do his part in a work which will make but slow progress without him.

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### OBITUARY

JEFFREY JAMES WALSH, M.D.

Born in Fall River, Mass., Sept. 23, 1883, died after a brief illness of ten days of lobar pneumonia.

His preliminary education was obtained in his native city. His wish to become a pharmacist was early realized. His assiduous devotion to his chosen field of endeavor supplemented by his native thrift and business acumen was soon rewarded with complete success and fired his ambition to climb to greater heights.

He matriculated at Tufts Dental School and commuted to Boston while still conducting his pharmacy in Fall River and received his D.D.S. in 1910. After a few years at his new profession, still imbued with a desire to climb higher, he re-entered his Alma Mater and was awarded the degree of M.D. in 1918. A post-graduate course in the Eye, Ear, Nose and Throat department of the Boston



City Hospital completed his studies and started him on a successful career of specialization.

He came to Providence in 1920 and opened an office on Broad Street. He at once contacted with the R. I. Hospital, St. Joseph's Hospital, the Charles V. Chapin Hospital, the Miriam Hospital, Homeopathic Hospital, all of Providence; the Pawtucket Memorial and the State Infirmary. He became a member of the Providence Medical Association, the R. I. Medical Society, the R. I. Otolological and Ophthalmological Society, the last of which he had represented as President and Secretary.

He again showed his interest in dentistry by membership in the R. I. Dental Society and at the time of his death was president of the local chapter of Tufts Alumni. He held a Fellowship in the American College of Surgeons since 1932.

On September 29, 1928, he married Mary M., daughter of Dr. and Mrs. John T. Ward. He served well for two years in the City Council of his adopted city, and while a member of the latter body was elected a member of the Board of Hospital Commissioners, acting as secretary for two years.

"Jeff," as he was familiarly known among his intimate friends, was very fond of swimming and rarely missed an opportunity to take in an intercollegiate football contest. He was genial and modest by nature, enjoyed and enlivened his associates by his youthful exuberance and always took a major part in entertainment.

In his professional work he was serious, practical, studious, conscientious, skillful, keen for work as exemplified by his numerous hospital affiliations. He entertained the highest ideals and stimulated the same in all those who were privileged to know him.

His friends extend to the bereaved family their keen sense of loss in the sudden passing of Dr. Jeffrey J. Walsh.

(Signed) EDWARD A. McLAUGHLIN

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#### ROBERT CONNERY O'NEIL

1899-1934

Dr. Robert Connery O'Neil died March 21, 1934, at his home in Warren, Rhode Island, from pneumonia of a few days' duration.

Born May 25, 1899, in Warren, Rhode Island, the son of Patrick W. and Margaret Connery O'Neil, he received his early education in the pub-

lic schools of Warren, later attending and graduating from La Salle Academy in this city. His collegiate work was done at Catholic University and Georgetown University in Washington, D. C. In 1925 he graduated from the Medical College of Virginia in Richmond, being president of his class. After internships at the Rhode Island Hospital and the Charles V. Chapin Hospital he became a house officer at the Massachusetts Eye and Ear Infirmary on the Ear, Nose, and Throat service. Upon completion of his training in Boston he opened an office in this city, confining his practice to ear, nose, and throat work.

Dr. O'Neil was a member of the Providence Medical Association, the Rhode Island Medical Society, the American Medical Association, and was president of the Rhode Island Ophthalmological and Otolological Society.

He was on the active staffs of the Rhode Island Hospital, the Charles V. Chapin Hospital, St. Joseph's Hospital, the Pawtucket Memorial Hospital and on the courtesy staff of the Homeopathic Hospital; at the State Institutions he was consulting otolaryngologist.

Notwithstanding the short time that he was in active practice his affable nature, good fellowship, and hearty laugh made a lasting impression and he will long be missed by his colleagues, friends, and the many patients in a practice which was growing rapidly.

Respectfully submitted,

RAYMOND F. HACKING, M.D.

JAMES H. FAGAN, M.D.

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#### THOMAS EDWARD DUFFEE, M.D.

Thomas Edward Duffee was born in Hillsboro, New Hampshire, in 1872. He attended the common schools of Hillsboro, the high school at Warren, New Hampshire, and Tufts Academy. He graduated from the University of Vermont in 1903 with the degree of Doctor of Medicine. After graduation from medical school, he practised for several years in Winchenden and East Bridgewater, Massachusetts. He then went to New York, where he spent a year taking post-graduate courses in diseases of the eye, ear, nose and throat. At the end of that time, he went to Gardner, Massachusetts, where he practised several years as a specialist in diseases of the eye, ear, nose and throat.

In 1912, he sold out his practice and took post-graduate courses in his specialty in New York and Philadelphia. He then opened an office in Pawtucket and was appointed chief of the Eye, Ear, Nose and Throat department of the Memorial Hospital, Pawtucket, R. I. He was also connected with the Eye, Ear, Nose and Throat department at the Rhode Island Hospital from April, 1915, to February, 1922. He practised his specialty in Pawtucket and Providence from 1913 to 1932.

He resigned from the Memorial Hospital Staff, January 1, 1928, and was appointed to the Consulting Staff. In 1932, he opened an office in Wakefield, Rhode Island, and lived at Tower Hill up to the time of his death, which occurred at the Wakefield Hospital on November 10, 1933, from a complication of diseases.

Dr. Duffee was a thirty-second degree Mason. He was a member of the Artisan Lodge of Winchenden, Massachusetts, a Knights Templar and a member of the Rhode Island Consistory. He was also a member of the Palestine Temple, Order of the Mystic Shrine.

His clubs were the Wannamoisett Country Club and the University Club of Providence.

He was a successful practitioner in his specialty of the eye, ear, nose and throat in Pawtucket and Providence for twenty years. He was a member of the Providence Medical Association, the R. I. Medical Society and the American Medical Association.

He was married in 1914 to Emogene L. Menzel, who with one daughter, Jane Elizabeth Duffee, survive him.

HENRY W. HOPKINS, M.D.

CHARLES O. COOKE, M.D.

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Joel Audubon Webb, M.D., was born in Perryville, South Kingstown, R. I., July 16, 1854, the son of Stanley W. and Rebecca Ann (Hazard) Webb.

He was educated in the public schools, and at Highland Military Academy, Worcester, Mass. He taught school and afterward studied in the office of his preceptor, George F. Keene, M.D., also of fragrant memory.

He was graduated from the medical department of New York University in 1889. He had lived at intervals in Plainfield, Conn., Norwich, Conn., and, in the main, Providence, R. I.

He practised medicine only a short time. For many years he was on the staff of Sampson & Murdock Company, publishers of the Providence Directory.

Dr. Webb never married.

He was an attentive and interested listener to our scientific programs. Constant, faithful, he seldom missed a meeting of this society.

He died in Providence, R. I., February 20, 1934.

Respectfully submitted,

J. E. Mowry

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## SOCIETIES

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### PROVIDENCE MEDICAL ASSOCIATION

The regular monthly meeting of the Providence Medical Association was called to order by the president, Dr. Charles F. Gormly, Monday evening, April 2, 1934, at 8:45 o'clock. The records of the last meeting were read and approved. Dr. Jesse E. Mowry read an obituary on Dr. Joel Webb and Dr. Edward A. McLaughlin read one on Dr. Jeffrey J. Walsh. It was voted to spread these on the records, print them in the JOURNAL and send copies to the families.

Dr. James F. Boyd reported two cases of superior pulmonary sulcus tumors with X-ray films. These were discussed by Dr. Edward S. Cameron.

Dr. James F. Hawkins reported a case of adenoma from the naso pharynx.

Dr. Peter Pineo Chase read the first paper of the evening on "Cancer of the Mouth." Cancers of the lower lip were considered separately from those of the buccal mucous membrane being generally less serious. They can be treated by excision or radiation and in properly selected cases the upper neck is dissected. In both situations irritation appears to be a predisposing factor. Biopsies are very important. Inside the mouth radiation is more used although surgery is not excluded. Mouth hygiene is important. Quick decision and vigorous action is the watchword. Discussion was by Drs. Clarke, Gerber and Oddo.

Dr. Lucius C. Kingman reported for the Public Relations Committee that the school department had consulted them regarding a physical examination of children before entering school. The committee thought the idea good but felt that wherever possible these examinations should be done by fam-

ily physicians with a follow-up by public health nurses. The report was discussed by Drs. J. Kelley, Skelton and Kingman, was accepted. The secretary instructed to forward a copy to the Superintendent of Schools.

The second paper was by Charles J. Smith, D.M.D., "A Consideration of Some Diseases of the Jaw." He laid stress on osteomyelitis, which is rare in the upper jaw but common in the lower and felt the medical men and dentists should work together on this. Pain, fever and trismus after extraction are very suggestive but X-rays may be negative in early cases and should be repeated. Drainage is important. These infections are usually in the molar and bicuspid regions. He also discussed cysts and various tumors, all requiring surgery. The paper was illustrated by numerous interesting slides and a case report where an entire lower jaw was removed as a sequestrum.

The meeting adjourned at 10:50 P. M. Attendance, 109. Collation followed.

Respectfully submitted,

PETER PINEO CHASE, *Secretary*

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The regular monthly meeting of the Providence Medical Association was called to order by the president, Dr. Charles F. Gormly, Monday evening, May 7, 1934, at 9:50 o'clock. The records of the last meeting were read and approved.

Dr. Charles O. Cooke read an obituary on Dr. T. E. Duffee and Dr. Raymond F. Hacking read one on Dr. Robert C. O'Neil. It was voted to spread these on the records, send a copy to the family and one to the medical journal.

Drs. Kenneth G. Buxton and Louis A. Normandin were elected to membership.

A letter was read suggesting a Providence Medical Association golf tournament. On the motion of Dr. Charles O. Cooke the president was empowered to appoint a committee of five to organize such a tournament and the appropriation of the necessary money was referred to the Standing Committee.

Dr. Milton C. Goldberger read the first paper on Sterility; the investigations and findings in 24 cases. Usually no single factor is held responsible but there may be a threshold of conception which is not reached and a question of relative sterility. He discussed the factors involved and the methods

of investigation. In 47% of the cases the males were apparently partly responsible and in 26% the females were absolutely sterile. Drs. Ira Noyes and Pitts discussed the paper.

Dr. Thomas R. Goethals of the Harvard Medical School and Boston Lying-In Hospital read the second paper on "The Risk to the Infant in Breech Delivery." This was a statistical paper analyzing 1,059 breech deliveries in a total of 26,420 and bore out the generally accepted impression that such deliveries are much more dangerous to the baby than vertex. Drs. Walsh and Brackett discussed the paper.

Dr. G. Elliott May of Boston City Hospital and Harvard Medical School read a paper on "Dehydration Therapy in the Toxemias of Pregnancy." The etiology of these cases is still not known but they presumably are not a kidney problem. As hydrated animals tend to convulsions and the brain of eclamptics is found edematous and 8-10 ounces of concentrated urine is found sufficient to take care of the body needs, they dehydrate toxic patients by giving them magnesium sulphate and a glass less of fluid daily than the previous day's output of urine. In a small number of cases thus far treated the results are encouraging. The paper was discussed by Drs. Brackett, Buxton, Partridge, Hale and Appleton.

The meeting adjourned at 10:45 P. M. Attendance, 112. Collation was served.

Respectfully submitted,

PETER PINEO CHASE, *Secretary*

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#### PAWTUCKET MEDICAL SOCIETY

The House of Delegates at its annual meeting approved and adopted the report of its committees on Public Health Clinics. The salient parts of this report are as follows:

1. The co-operation of medical and lay societies is recognized as often being expeditious and beneficial; but the lay sponsoring of clinics should not be tolerated except in co-operation with local society or hospital.

2. Grievance committees of local physicians should be formed to iron out difficulties with related social and welfare agencies in communities where such committees do not now exist.



3. All clinics of whatever nature be operated only by local hospital or by special approval of local medical society.

4. It is considered unethical for full-time Federal, State or Municipal physicians to engage in any form of private practise.

5. All clinics to be operated for the INDIGENT only and a determined and searching inquiry to be made as to the actual financial condition of all patients before their admission to the clinics.

6. Oppose the practise of State Welfare nurses visiting post-natal cases of private physicians. Activities of the nurses should be restricted to the indigent.

7. District nurses should not do blood pressure or urine examinations on pre-natal cases. Physicians should do their own work and not expect the nurse to do it for them.

8. Nurses should not refer patients to a tonsil clinic directly. All suspected tonsil and adenoid cases to be first referred to the family physician. If patient has no regular family physician they should select one.

9. Oppose the operation of K L immunization clinics and child welfare clinics except for the indigent.

10. Oppose operation of pre-school clinics, but sponsor the pre-school examination by family physician.

11. Favor the adoption of school department regulation requiring K L immunization as well as vaccination before admittance to school.

This committee has been authorized to contact the various medical, social and welfare agencies with a view to obtaining their co-operation in this program.

It is eventually hoped that the co-operation of every member of the medical fraternity in Rhode Island will be obtained.

Now that the State Society has taken a definite stand in these matters it behooves every physician to decline to serve on clinics not approved of and to refuse to do pre-school clinics with the assurance that everyone else will do likewise.

When a lay or nursing organization plans to operate any welfare project it should apply to the district society and if approved, the district society should assign its members to serve in rotation unless the society agrees to a permanent appointee.

In any event the organization sponsoring the welfare project should apply to the District Society and not to the individual physician. All physicians approached to serve on such projects should first consult the District Society before accepting any appointments.

Within a few months each district society will have an opportunity to consider the desirability of the various clinics in their locality and to state their attitude toward them.

This committee is ready to aid in every way in bringing harmony out of discord and welcomes suggestions and reports from all sources.

As a separate but vital part of the committee's program is a plan for post-graduate instructions for members of the State Society. If it is found to be possible lectures will be held, demonstrations given and courses arranged to present new methods of diagnosis and treatment. Radio talks, lectures to the general public, and newspaper advertisements marked "Approved by Rhode Island Medical Society" will be used in an effort to make the general public conscious of medical services. This is in line with similar approved practises elsewhere.

Many other phases of the program remain undecided at present, but one definite object is to make the Rhode Island Medical Society the voice and the regulating medium of the physicians of this State. It is proposed to have the Society speak authoritatively on medical practise and to exert itself to the utmost for the welfare of its individual members, so that membership in the Society is a desirable and profitable thing.

A campaign for membership is being waged and you are asked to personally canvass those members of your district Society who have never joined the State Society in an effort to enroll them as new members. A check for \$10.00 made out to the Rhode Island Medical Society should be mailed to Dr. J. W. Leech, Secretary, for each new applicant.

A member of this committee will call on each society in the Fall to further and more directly acquaint them with our plans and the results of our efforts.

The socialization of the practise of medicine is well within the realm of probability and only by prompt and decisive action now can we avoid such a catastrophe in Rhode Island.

Your earnest co-operation will be appreciated.

CHARLES L. FARRELL, M.D.

RHODE ISLAND MEDICAL SOCIETY  
ANNUAL MEETING

**REPORTS OF COMMITTEES**

(Continued from the August Journal)

ANNUAL REPORT OF COMMITTEE ON PUBLIC  
HEALTH CLINICS

The Committee on Public Health Clinics submits its first preliminary report.

The report is divided into three sections:—

Section 1. consists of the more important information placed before the committee by individual physicians, members of the Medical Societies of Woonsocket, Pawtucket and Newport, the grievance committee of the Kent County Medical Society and it deals with the activities of State operated clinics—Well Baby Clinics, Part Pay Clinics, Nursing Association Clinics, Pre-School Clinics and Immunization Clinics.

Section 2. embodies the recommendations of the committee as a result of its review of the material in Section 1.

Section 3. recognizes the trend toward "state medicine" or rather the "socialization of medicine" and suggests possible courses of action open to this society.

*Section 1.*

1. As regards the Mental Hygiene Clinics in Woonsocket your committee finds that Woonsocket physicians object to the operation of a Mental Hygiene Clinic by state paid physicians, under lay auspices, as at present; but are willing and anxious to operate such a clinic in the hospital or by themselves with co-operation of state physicians when and if needed.

2. In Newport the Mental Hygiene Clinic is operated under lay auspices by a private physician and is not located in nor connected with the hospital. The operation of this clinic in this manner is objected to, but the hospital staff is anxious to have such a clinic in the hospital under direction of the hospital staff with the co-operation of state physicians when and if needed.

3. Woonsocket physicians are evidently unable to obtain the proper degree of co-operation with the District Nursing Association and have withdrawn their medical representative from the board of directors.

4. The clinics for tuberculosis are held at the Woonsocket Hospital, the Pawtucket Red Cross and Newport Hospital, but are operated by state paid physicians. The instructions sent to the Pawtucket Clinic, copies of which were given the com-

mittee, are so drawn as to permit the admission to the clinic of almost anyone at anytime whether able to pay a physician or not, and the report for the year 1933 shows 312 new cases, of which, only 32 were referred by physicians—5 from hospitals and 14 from such sources as Department of Public Aid, S. P. Cruelty to Children, Mother's Aid, Associated Charities, etc., who were evidently in a position to know the financial status of the patients—while 211 cases were referred by Red Cross Nurses. It is evident that the zealousness of Red Cross Nurses is for record attendance and the *Clinic* rather than the *local physician* is paramount.

There seems to be no check on the ability of a patient to pay, and it has been reported that patients well able to pay are treated at the tuberculosis clinic. In one instance where a patient was discharged to a private physician he returned because of political influence. The contacts of a tuberculosis case should be examined by the family physician, but often the contacts get to the clinics without knowledge of the physician. These contacts are examined and X-rayed at the State's expense. On instructions from Dr. Barnes the clinic (state) physician may not examine a patient who is able to pay a specialist, at the clinic, but he may see him at his home and collect a fee for such an examination after the clinic is over. Nurses may bring, as a patient to the clinic, any person who is reluctant to go to a doctor.

It is also claimed that many cases are admitted and sent to Wallum Lake who are not tubercular; also that X-ray work is done for reduced or nominal fees.

5. The state operates Child Welfare Clinics; Pawtucket and Newport operated Well Baby Clinics where babies are weighed and examined—formulas changed and advice given to mothers. There seems to be no check on the ability to pay, as mothers who were delivered as private patients, are attending these clinics.

6. State Welfare nurses call on patients discharged from maternity hospitals even though they are private patients and without the knowledge or consent of the physician in charge.

7. District nurses have on occasions taken blood pressures and examined urine on pre-natal cases and have made calls without request of the physician.

8. Evidence was presented that an insurance company official made "nursing care" an issue in his drive for more business and urged his agents to employ it as much as possible.

9. Nurses have reported, as Scarlet Fever, cases where the physician in charge had not decided as to the diagnosis, and while waiting for 24 hours to elapse found the house placarded.

10. Nurses have been engaged in examining throats and deciding on the advisability of tonsillectomy—then referring the patient to Part Pay Clinics for operation instead of first referring them to their family physician. Two such clinics were reported.

11. Nurses in Woonsocket have also referred cases for tonsillectomy without being seen by a physician and operation has many times been refused by city physicians.

12. The operation of clinics for the immunization against Diphtheria by State Welfare Nursing Association or other auspices without regard to the need for free services is claimed to be detrimental to the interests of the private practitioner.

13. The operation of Pre-School Clinics, using private practitioners at no salary, do work which is in the province of the family physician. This work is often undertaken reluctantly by the physician asked to attend, but they accept because the custom is general and there is no record of the attitude of this society regarding this work.

14. As an instance of the operation of free Diphtheria immunization clinic—a person who runs a private kindergarten attended by children whose parents are well able to pay a physician, took her charges to the State Clinic and had them all immunized against Diphtheria.

15. Persons are circularized to take their children to clinics for immunization. Clinics have a way of advertising—physicians do not. Literature sent out from Child Welfare Bureau and distributed by state nurses, urges parents to bring children to a free clinic at the State Office Building for immunization.

### Section 2.

After due consideration of the material in Section 1 your committee makes the following specific recommendations:—

1. The co-operation of medical and lay societies is recognized as often being expeditious and beneficial; but the lay sponsoring of clinics should not be tolerated except in co-operation with the local Medical Society or hospital.

2. We suggest the formation of a committee of physicians of the Woonsocket Medical Society to act as a grievance committee whose functions will be to iron out difficulties with District Nursing As-

sociations. It is felt that if District Nursing Association Directors can be shown the medical aspect, and the physicians shown the District Nursing Association aspect—a solution to all difficulties will be speedily forthcoming. Such a system works well in Pawtucket.

3. Recognize the principle that *all* clinics of whatever nature be operated only by the local hospital or by special approval of the local Medical Society.

4. Establish Tuberculosis and Mental Clinics in local hospitals with local physicians on the staff if desired by them.

5. Consider it unethical for State, City or Federal full time physicians to engage in private practise.

6. Oppose the operation of State Clinics unless requested by the local Medical Society. In communities where facilities for such clinics under hospital auspices are limited or impossible the location of the clinic should meet the approval of the Medical Society.

7. Oppose the practice of all hospitals in doing X-ray work on ambulant patients not admitted to hospitals or Out-Patient as regular ward or clinic cases.

8. Child Welfare Clinics in general do good work, except that there is a tendency on the part of some physicians in attendance to make radical changes in formulas, and while not actually treating patients with medicine, instances are recalled where definitely mal-nourished and eczematous infants were not referred to a private physician but kept on at a clinic on formula changes. The "ability to pay" should be the criterion for admission to all at these clinics.

9. State Welfare Nurses are furnished with a list of discharged maternity cases, and they call on them without knowledge of the physician and give advice. Your committee suggests that the State Society arrange with the Welfare Commission to limit the activities of its nurses to the indigent and reiterate the principle that ABILITY to pay be the criterion of public welfare service everywhere.

10. The State Society should make representations to the Providence District Nurses Association regarding co-operation along the usual lines—stressing the fact that nurses should not take blood pressures, do urine examinations nor diagnose contagious diseases when there is a physician on the case.



11. It is further suggested, in regard to nurses in private homes, that the following principle be agreed upon and adhered to:—i.e., It is unethical for a nurse to visit the private patient of any physician while he is in attendance on the case except when requested to do so by the physician or by the family themselves. In many instances neighbors and insurance agents have wasted many nursing hours by sending nurses to homes where they were neither needed nor desired by the family or the physician. The State Society could clarify the situation by enlisting officially the co-operation of the insurance companies in not sending nurses without first consulting the physician in charge.

12. The State Society seek further co-operation with District Nursing Associations in regards to tonsil refers. It should be repeated that in cases of suspected tonsil infections all patients be referred first to the family physician before arrangements are made for operation.

13. Your committee is fully sensible of the splendid showing our state has made in Diphtheria records and appreciate the necessity for Diphtheria immunization work, but it is reminded that we also have a splendid record as regards smallpox because of compulsory vaccination before admittance to school. It is suggested that the State Society assume an active part in the establishment of school department regulations which would make Diphtheria immunization necessary for admission to school. The committee also recommends that the immunization work be done largely by private practitioners and the state or other Welfare clinics be conducted, as always, for the *indigent* only.

14. State Society to go on record as opposed to the operation of the so-called "Pre-School Clinics" but sponsor the Pre-School examination by the family physician, and the examination of the indigent Pre-School child at established Child Welfare Clinics.

### Section 3.

The socialization of the practise of medicine is well within the realm of probability, and we find many articles in the public press to support such a contention. Government agencies are assuming more of the responsibilities of maintaining the public health. This is due in a large measure to the indifference on the part of most physicians to the field of preventative medicine. To quote from the report of the Michigan Survey of Medical Services and Health Agencies: "Involved in the picture is the finding that the public does not seek nor does

the average physician report anything but a meager practise in the field of preventative medicine." "Effective preventative medicine (Public Health Work) depends on the co-operation of Public Health officers and individual physicians in joint participation." "Do away with health clinics and return the patient to the doctor;" "interest the profession in economic problems;" "economics is the science that deals with the material means of satisfying human desires. The health desires of the public will be satisfied when we of the medical profession reflect the material means of individual proficiency, combined with public consciousness and the public recognizes *its* obligation to share in the burden of providing adequate medical care for the body politic."

Dr. W. W. Bauer, director of Bureau of Health and Public Instruction of the A. M. A., says—regarding community responsibility of the health of the individual—"There is, of course, no disagreement about such community measures applicable en masse, as the purification of water supplies or the inspection of meat, milk and perishable foods, nor is the necessity for health education in the schools and by health departments questioned. These are plainly outside the province of individual effort, and must be done by the community—also they are outside the domain of health nursing. It happens that most of the Public Health activities on which there has been disagreement have been those in which Public Health nurses necessarily play a large part. Particularly in the field of infant health, and more lately in connection with pre-natal programs and pre-school project as well as immunizations, differences have arisen as to how far the community may go with propriety in promoting health of individuals without considering the financial ability of the persons concerned." "All successful Public Health Clinics reduce the market for medical services;" "The traditional reserve of the medical profession and its ethical objection to personal exploitation have caused it to permit the initiative in many health programs to pass to other hands perhaps not for the best interests of the community." An article in a weekly magazine recently held that medical care was a social right, ridiculed the code of ethics and raised the question as to how long the doctor would continue in the role of an individual "*business*" man. As evidence of changing times, Detroit pays private physicians for doing in their own offices services ordinarily performed by salaried health department physicians. Cali-

fornia has a law to regulate clinics. In Indiana the State Medical Association reorganized the State Health Department and dismissed physicians who did Well Baby demonstrations and mothers classes throughout the state because of competition with private physicians. The New York State Medical Society sponsored a bill in last year's legislature which would curtail or close clinics who were caring for patients able to pay private physicians.

Thus we see the trend of the times in other communities and the reactions to such trends. In Rhode Island we have as yet no need for drastic measures. Our abuses are not great and should easily be remedied by timely and forceful action of the part of this society with out legislative measures except as a last resort. The Rhode Island Medical Society should adopt a militant attitude regarding the trend to State Medicine and should assume the leadership in promoting the welfare of its individual members and safeguard their rights to private practise. This could be done by definite committee contacts with all related social, medical and welfare agencies with a view to clarification of their several aims and a limitation of their operations to avoid conflict and the duplication of effort. Another committee could direct the attention of the members to the field of preventative medicine—urging and aiding their co-operation by lectures and various post-graduate instruction classes as is done in many other states. Still another phase of State Society activity should be the placing of informative advertisements in the public press marked with the endorsement of the Rhode Island Medical Society. This work could be extended to include the distribution to individual members of printed forms bearing State Society endorsement, but minus the physicians name, to be included in the monthly bills of patients urging them to take cognizance of preventative medical services. Such is the ethical practise in Philadelphia. An active campaign should be waged by radio talks and public lectures in an effort to promote public consciousness of medical services. In Michigan 400 physician speakers talk at luncheon clubs and welfare organizations. The Rhode Island Medical Society should be the voice and the regulating medium of the physicians of this state. It should speak clearly, positively and often. Its action should be decisive and prompt for the welfare of its members.

We urge an immediate attempt be made to bring within the society all physicians in Rhode Island who are eligible and who for one reason or another have never joined. These men should feel that this is their society and that by supporting it they are furthering their own interests and that they will receive definite benefits from membership in it. The State Society should be more than a body before whom papers are read. Its committees should be clothed with sufficient authority and given sufficient funds for action. If revenues at present are not great enough, new sources should be found by new members or by increased assess-

ment, which would be forthcoming right enough if members were assured of positive benefits thereby. The committee suggests that this committee be increased to five members and that its authority be extended to contact the Social Welfare, Medical and Nursing agencies, with the view to obtaining their co-operation in correcting abuses and to arrive at a proper understanding with them.

(It was voted that the Committee on Health Clinics be continued and be enlarged by the addition of Doctors N. Garrison of Woonsocket, and J. F. Archambault of W. Warwick.)

CHAS. L. FARRELL, M.D., *Chairman*

HARVEY B. SANBORN, M.D.

CECIL C. DUSTIN, M.D.

#### NEW ENGLAND MEDICAL COUNCIL

Dr. J. A. Chase reported that the Executive Committee of the Council did not feel that any change should be made at this time with reference to the allocation of the share of expenses to the different State Societies. He further reported that the meetings of the Council had been temporarily discontinued.

#### *New Business*

The following resolution in regard to Radio Broadcasting was adopted:

Resolved,—

That the Rhode Island Medical Society is opposed to the advertising over the radio of medicines or appliances for the treatment of human ailments and that a copy of this resolution be sent to the Federal Radio Commission with the request that in the interest of the health of the citizens of the U. S. the said Commission exercise their authority to discontinue such advertising on the radio.

On motion made and seconded, it was voted that a committee to be known as a Committee on Cancer be appointed by the President, and the President appointed the following men:

Dr. Herman Pitts, Chairman, Providence; Dr. B. Earl Clarke, Providence; Dr. Geo. Waterman, Secretary, Providence; Dr. I. Gerber, Providence; Dr. J. C. O'Connell, Providence; Dr. P. P. Chase, Providence; Dr. John Kenney, Pawtucket; Dr. C. S. Christie, (Kent Co.), W. Warwick; Dr. W. Rocheleau, Woonsocket; Dr. M. H. Sullivan, Newport; Dr. John Champlin, Jr., (Washington Co.), Westerly.

The following communication from the R. I. Public Health Commission was read by the Secretary.

#### R. I. PUBLIC HEALTH COMMISSION

Providence, R. I., May 18, 1934

"Dear Dr. Leech,—

By direction of the Rhode Island Public Health Commission, I am writing the secretaries of all the state organizations of practitioners of the healing arts relative to certain contemplated changes in



laboratory work carried on by the laboratories of the Public Health Commission.

Owing to a marked increase in the number of specimens submitted to our laboratories during the past three years, it became necessary to discontinue certain types of work about a year ago. During the past year, however, the number of specimens submitted has increased until at present the amount of work submitted is far in excess of the ability of the laboratory personnel to handle without putting in many hours overtime nearly every night. It is not unusual to find three or four men working until after midnight several nights each week to keep up with the work.

We tried to secure additional appropriations in the regular appropriation bill and later by special resolution, but were unsuccessful in both.

The work of the Laboratories of Pathology and Bacteriology is divided into six major divisions as follows:

1. Bacteriological examinations to assist in diagnosing infectious diseases.
2. Serological examinations in suspected cases of syphilis, typhoid and undulant fever.
3. Microscopic examination of tissue removed at operations or at autopsies.
4. Toxicological, pathological and microscopic examinations to assist medical examiners and police officials in solving known or suspected crimes.
5. Chemical blood examinations.
6. Chemical and microscopic urine analyses.

In view of the fact that with our present limited personnel it is impossible for our laboratories to handle all the work submitted without requiring a large percentage of the personnel to work nights, the Public Health Commission has for several months given serious consideration to curtailment or elimination of services rendered and has decided that the discontinuation of urine analysis is that part of the work the elimination of which would least embarrass the physicians and which would work out to the least disadvantage to the public as a whole.

The Public Health Commission is considering seriously the discontinuation of urine analysis on June 30th of this year and suggests that you present this matter to your society at its next regular meeting to determine whether there is on the part of your society any serious objection to this contemplated action by the Commission. Trusting that your society will approve this Commission's contemplated action in this matter, I am

Very truly yours,

LESTER A. ROUND, PH.D.,  
*Director of Public Health.*"

and the following resolution was adopted:

"Resolved,—That the Rhode Island Medical Society, while regretting that the Rhode Island Health Commission finds it necessary to curtail certain of its services to physicians, nevertheless, is in

agreement with the Rhode Island Public Health Commission that the elimination of routine urine analyses will result in the least hardship to the physicians and patients, and urges that the Fellows of the Rhode Island Medical Society cooperate with the Rhode Island Health Commission by limiting requests for services to such cases as in their opinion actually require such services for the proper conduct of the case."

On motion made and seconded it was voted that the President appoint a committee of three to consider changes in the By-Laws relative to the meetings of the Rhode Island Medical Society, and the President appointed the following doctors: Dr. A. T. Jones, Dr. C. F. Gornly, Dr. N. Garrison.

Respectfully submitted,

J. W. LEECH, M.D.,  
*Secretary.*

May 24, 1934

## IMPORTANT NOTICE

The following letter from the Department of Commerce at Washington, D. C., has been received by the Secretary of the Rhode Island Medical Society.

DEPARTMENT OF COMMERCE

Bureau of Foreign and Domestic Commerce  
Washington

June 22, 1934.

Dr. J. W. Leech, Secretary,  
Rhode Island Medical Society,  
167 Angell Street,  
Providence, Rhode Island.

Dear Sir:

In connection with our report to the United States Senate on National Income 1929-1932, we sent out to physicians and surgeons several thousand questionnaires, for anonymous return, and thus collected from every section of the country a fair sample of data on which to estimate total income from practice in the medical profession. Our report was printed as Senate Document 124, and a brief summary is enclosed.

The average net income from practice (tabulated in our report in Table 181 as "per capita income withdrawn") for the years 1929 through 1932 is shown below; it is the result of our survey by questionnaire:

1929	\$5,602	1931	\$4,544
1930	5,307	1932	3,442

We are now preparing a report, for release this fall, of national income in 1933, and while it is not feasible at this time to gather new data by the questionnaire method, a reasonable figure could be arrived at by using the trend of average income furnished by the Medical Association of each State.

(Continued on page XVIII)



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Ease of administration  
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Philadelphia

## IMPORTANT NOTICE

(Continued from page 162)

I shall therefore greatly appreciate an expression of opinion from you as to whether the average income of physicians and surgeons from practice, in your State, tended to show an increase in 1933 over 1932, of a decrease, or no change. The degree of change could be roughly indicated as an approximate percentage.

For your convenience in replying, I am sending this letter to you in duplicate, with the request that you check off your estimate on the diagram given below and return one copy to me as soon as possible, in the enclosed official envelope which requires no postage. Your reply will, of course, be considered confidential, and your expression of opinion will prove most helpful.

*Change in Average Net Income of Physicians  
and Surgeons from 1932 to 1933*

5% 10% 15% 20% 25% No change

Increase

Decrease

Very truly yours,

ROBERT F. MARTIN,  
Senior Economic Analyst,  
Division of Economic Research.

August 11, 1934.

Please reply at once. We hope to complete this work within a month.

In the hope that publication and dissemination of the fact that physicians' incomes have suffered a marked decrease during the depression may have some effect toward stilling the clamor about the high costs of medical care, I urge the members of the Rhode Island Medical Society to send me *anonymously* a statement of the percentage of change in their income of 1933 as compared with that of 1932.

This information, *anonymous* and *confidential*, will be forwarded to the Department of Commerce.

J. W. LEECH, Sec'y.

## NOTICE

To insure prompt attention, the readers of this JOURNAL are advised: That matters pertaining to advertising, mailing and accounts should be addressed the Business Manager, Dr. C. W. Skelton, 106 Francis Street, Providence, R. I.

Other matters, books for review, notices, manuscript, letters, reports of meetings, and all affairs of literary nature should be addressed to the Editor, Dr. Frederick N. Brown, 309 Olney Street, Providence, R. I.

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# THE RHODE ISLAND MEDICAL JOURNAL



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VOLUME XVII  
No. 10

Whole No. 301

PROVIDENCE, R. I., OCTOBER, 1934

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require extra diapering, and inconvenience the mother

Clinically, loose stools are accompanied by a dehydration which, when excessive or long continued, interferes with the baby's normal gain. A long-continued depletion of water is serious, since "the fluid requirements of an infant are tremendous. A normal infant 15 pounds in weight will frequently excrete as much as one litre of urine per day. A negative water balance for more than a very short period is incompatible with life." (Brown and Tisdall)

Moreover, when the condition is superimposed by chance infection, the delicate balance may be seriously upset, since the infant's reserves have already been drawn upon, so that resistance to infection and dangerous forms of diarrhea may be too low for safety. Every physician dreads diarrhea, which Holt and McIntosh call "the commonest ailment of infants in the summer months."

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We invite and urge you to use this Service. It is absolutely free to you.

The Co-operative Bureau is equipped with catalogues and price lists of manufacturers, and can supply you information by return mail.

Perhaps you want a certain kind of instrument which is not advertised in “The Journal,” and do not know where to secure it; or do not know where to obtain some automobile supplies you need. This Service Bureau will give you the information.

Whenever possible, the goods will be advertised in our pages; but if they are not, we urge you to ask “The Journal” about them, or write direct to the Co-operative Medical Advertising Bureau, 535 N. Dearborn St., Chicago, Illinois.

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PER YEAR \$2.00  
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## ORIGINAL ARTICLES

### PNEUMONECTOMY: SUCCESSFUL RESULT IN A CASE OF BRONCHIECTASIS\*

By ESKE WINDSBERG, M.D.

OF PROVIDENCE, R. I.

One would hardly be justified in regarding an isolated instance of successful removal of an entire lung as sufficient to be made the subject of a serious presentation before this society. However, the subject of total pneumonectomy is of tremendous importance especially in its relation to the treatment of early cancer of the lung, and also in its relation to the radical cure of that distressing, benign condition, bronchiectasis, when it involves an entire lung. Efforts to diagnose cancer of the lung early will be greatly stimulated when efficient and relatively safe methods of therapy are developed. Fifteen years ago the diagnosis of primary lung cancer was made rarely outside of the autopsy room. For the treatment of lung cancer we were told ten years ago as medical students at Cornell, to speak nicely to the relatives and call in the undertaker. With the further development of roentgenology, bronchoscopy, and bronchoscopic biopsy, it is now possible to arrive at a fairly early diagnosis. We are challenged now with the task of formulating efficient methods of treatment. In the squamous cell type of bronchogenic cancer, which constitutes 68% of bronchogenic cancers, Clerf and Crawford<sup>1</sup> state that endobronchial removal, including electrocoagulation, has been found useless. Irradiation therapy of primary pulmonary carcinoma, according to Ballon and Carlson,<sup>2</sup> has up to the present been extremely disappointing. The implantation of radon seeds through the bronchoscope, as described by Tudor Edwards,<sup>3</sup> holds some promise for satisfactory results.

Total pneumonectomy must of necessity become one of the effective, if not the most effective, means

at our disposal in the treatment of early lung cancer. This operation will be resorted to more frequently when it is demonstrated that an entire lung can be removed in man with a fair degree of safety. For early cancer of the lung, and for some forms of bronchiectasis, total pneumonectomy will be as important a therapeutic measure as total or subtotal gastrectomy is for early gastric cancer, and radical mastectomy for early breast cancer.

With this broader viewpoint in mind, I humbly proceed to consider briefly the subject of total pneumonectomy and to report in brief an instance of total pneumonectomy which I accomplished successfully in a patient whose entire right lung was the seat of bronchiectasis. A review of the few cases in which the patient has survived pneumonectomy will be given. The technique employed by the several operators will be described.

Macewen<sup>4</sup> extirpated a tuberculous lung which had become converted into a pus sac. There was hardly anything left of the parenchyma, and no special care of the hilum region was necessary. Inadvertently, it seems, Sauerbruch,<sup>5</sup> while removing a large ganglioneuroma, ligated the left primary bronchus and the bronchial artery. The entire lung was cast off ten days later. The patient recovered.

In 1931, Nissen,<sup>6</sup> at Sauerbruch's clinic, in Berlin, extirpated the left lung in a girl of twelve. This may really be considered the first successful pneumonectomy on record; for in Macewen's patient a mere shell of tissue forming the enclosure of a pus cavity was removed, while in Sauerbruch's patient the pneumonectomy apparently constituted an accidental complication. In Nissen's patient cicatricial stenosis of the left primary bronchus developed following a traumatic injury; ultimately bronchiectatic cavitation occurred. Nissen paralyzed the diaphragm. He approached the lung after resecting the third, fourth, and fifth ribs in the axilla. The lower lobe was now freed. Transitory arrest of heart action made it necessary to terminate the operation at this point. Two weeks later, through the same approach, the upper lobe was freed. A rubber tube and silk ligatures were tied about the hilum. The lung was surrounded by tampons on all sides. Two weeks later the necrotic lung was pulled

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out together with the hilus ligatures which had been left long. A bronchial fistula was still present eight weeks after operation. Displacement of the mediastinal structures, and of the diaphragm, filled the pleural cavity. Ether anesthesia was employed.

On November 8, 1932, the writer<sup>†</sup>\* completed the removal of the entire right lung in a twelve-year-old girl. The entire lung was the seat of bronchiectatic cavitation, atelectasis, and fibrosis. Prior to the onset of her present illness she was well. In April, 1926, she contracted measles and bronchopneumonia. She was gravely ill at the Chapin Hospital from April 23, 1926, to September 7, 1926. The acute symptoms subsided gradually; but a low grade fever, cough, and expectoration of foul smelling sputum have continued ever since. Since April, 1926, she had been confined to hospital care almost continuously, in seven different institutions, for more than six years. Apparently the bronchopneumonia had resulted in a partial stenosis of the right main bronchus, and subsequently bronchiectatic cavitation became established in the left lung.

The expectoration of fetid sputum was massive in amount; it often reached a maximum of 350 gms. per day. It was difficult to reduce it below 125 gms. daily even with routine postural drainage. On several occasions her sputum contained small amounts of bright red blood. Dyspnea occurred on moderate exertion. While in the hospital, with the aid of postural drainage, she would feel quite well and usually maintain a well-nourished appearance. During the short intervals at home she would lose weight, develop fever of considerable degree, and feel generally ill. During the years of her illness she had a temperature of 99° almost constantly, and 100° occasionally. Smears and guinea-pig inoculations of the sputum were always negative for tuberculosis. The Von-Pirquet test was positive in 1930.

Frequent X-ray studies were made of the lungs since the onset of the illness. Increased density in the shadow of the entire right side of the chest, most marked toward the base, was apparent very early. The density of the shadow at the base was suggestive of fluid, but needling on several occasions did not disclose the presence of fluid. In November, 1927, it was noted that the heart and trachea were displaced to the right; multiple fluid

levels, changing with the shifting of the patient's position, were seen. The deviation of the trachea, heart, and other mediastinal structures to the right became more marked as time progressed.

Bronchoscopy (by Dr. B. Sharp) revealed stenosis of the right main bronchus. An attempt to inject lipiodol into the right bronchial tree failed on four occasions, except for a small amount which entered what appeared to be the beginning of the middle lobe bronchus. Lipiodol visualization of the left lung demonstrated it to be in healthy condition.

Dr. Alex. M. Burgess, who had seen the patient in previous years, was called in consultation. In view of the long standing history, with no evidence of improvement, and with some evidence that the patient's condition was gradually getting worse, it was agreed that some form of radical therapy should be carried out.

The operative removal of the right lung was effected in stages. The cautery method of Graham<sup>8</sup> and amputation at the hilum were employed. On September 10, 1932, through an axillary approach, the lung tissue was cauterized with a soldering iron, and multiple draining bronchial sinuses were created. On October 3, the cauterization was extended, and more pus pockets were opened. On October 26, the lung was subjected to further cauterization. At this time a small section of lung, which was mobilized from the pericardium by sharp dissection, was excised. On November 8, 1932, using avertin, supplemented with intratracheal nitrous-oxide anesthesia, and with intratracheal suction available, the remainder of the lung was mobilized. The hilum was transfixed and ligated close to the trachea. The lung was now amputated beyond the ligature. The bronchial mucous membrane in the stump of the hilum was treated with the actual cautery. The pulmonary vessels were individually ligated. The pleural cavity devoid of lung was packed with vaselined gauze.

The patient withstood the operative procedures remarkably well. Transfusions of citrated blood were given between stages. In each instance the progress after operation was uneventful. After the third stage the amount of expectoration was definitely reduced for the first time to 60 gms. daily. Following the last operation there were many days during which there was no expectoration, and when there was it never amounted to more than 5 gms. daily. She was now able to discontinue the use of a sputum box which had been a necessity for years.

\*A complete description of the technique employed and of the gross pathological findings at operation will be found in a forthcoming publication in *The Journal of Thoracic Surgery*.

The right pleural cavity devoid of lung rapidly became obliterated by a high rise of the diaphragm, an extreme shifting of the mediastinum, and the falling in of the soft parts of the chest wall in the field of operation. The patient was allowed home December 15, 1932. Since then the wound in the chest wall has healed completely except for the opening of a small bronchial fistula high up in the axilla, the size of a pin-head. The fistula has closed, only to open again, on several occasions. Lipiodol injection shows it to be about one and one-half inches in length and to lead directly to the stump of the main bronchus. It is felt that a partial thoracoplasty may be required to effect permanent closure of the fistula, as well as to overcome the extreme deviation of the trachea to the right.

During the past year the patient has gained in weight and in height. She has carried on well under the worst home conditions imaginable. She is able to play with other children. Moderate dyspnea develops only following considerable exertion. Cough and expectoration are insignificant, and due entirely to the presence of the bronchial fistula. Since September, 1933, she has been attending school for the first time in her life.

Haight,<sup>9\*</sup> on November 14, 1932, completed the removal of the left lung in a girl of thirteen. Five weeks following the extraction of teeth a foreign body was removed from her left main bronchus. Suppuration was present in both lungs. Spontaneous, tense, pneumothorax and an acute empyema developed on the left side; these complications were successfully treated by means of air-tight drainage. The right lung cleared. Stenosis of the left main bronchus and bronchiectasis persisted despite all conservative therapy and thoracoplasty. November 8, 1932, under nitrous-oxide anesthesia he removed the fourth, fifth, and sixth ribs (regenerated) posteriorly. The lower lobe was made free. Due to the patient's condition, the wound was now closed and air-tight drainage was established. November 14, 1932, the wound was reopened and the

entire lung was mobilized. Each lobe was ligated separately with double braided silk and rubber tube ligatures. Gauze was placed about the lung because there was oozing from the parietal pleura. The wound was closed and air-tight drainage was again established. Four days later the wound was packed wide open with gauze. On the sixteenth day the upper lobe sloughed off, and on the seventeenth day the lower lobe came away. A fistula occurred from the upper lobe bronchus, but this soon closed spontaneously. On December 28, 1933, the condition of the patient was excellent and she had no sputum.

Graham and Singer,<sup>11</sup> on April 5, 1933, using intratracheal anesthesia of nitrous oxide and oxygen, removed the left lung in a man aged forty-eight. A carcinoma was present in the bronchus of the upper lobe which was atelectatic and contained numerous small abscesses. Induced pneumothorax was present about the upper lobe, whereas the lower lobe was adherent. At operation the lower lobe was freed. A small rubber catheter was tied tightly about the hilum. With the electric cautery, the lung was cut off between this ligature and crushing clamps placed distally. The mucous membrane of the bronchial stump was destroyed by cauterization. The hilar stump was now transfixed and tied with a ligature of No. 2 chromic catgut placed distally to the catheter. The catheter was now removed, and in its stead another transfixion tie was placed. The stump of the pulmonary artery was tied separately with catgut. Radon seeds were inserted about the stump. The third to the ninth ribs inclusive were removed posteriorly and laterally. The wound was now closed and air-tight drainage was established. Primary union occurred, but the stump opened, and the patient was expectorating pus which came from the unobliterated upper portion of the pleural cavity. Subsequently the first and second ribs were also resected, and the empyema cavity was drained. The wounds were all solidly healed when the patient left the hospital on June 18, 1933.

Rienhoff<sup>12</sup> has performed two successful pneumonectomies. On July 24, 1933, he removed the left lung in a baby aged three and one-half years. On November 3, 1933, he removed the left lung in a woman twenty-four years of age. In each case the left primary bronchus was the seat of a tumor, in one benign and in the other malignant. The method employed in both cases was almost identical. Preliminary pneumothorax was gradually induced

\*Cameron Haight<sup>10</sup> has just had published the report of his case of total removal of the left lung for bronchiectasis. In his masterly article he reviews the literature on experimental pneumonectomy, and analyses the reports of the recorded unsuccessful instances of total pneumonectomy in man. He also makes brief mention of, as yet unpublished, cases of successful pneumonectomy by E. Archibald, J. Alexander, R. H. Overholt, and E. Windsberg. In his article Haight states that the case here reported "is apparently the second instance of successful total pneumonectomy in man. It is also the first successful case of total pneumonectomy in this country."



over a period of two weeks in order to permit the establishment of circulatory and respiratory balance under conditions as comparable as possible to those which may obtain following a pneumonectomy. At operation nitrous-oxide and oxygen anesthesia was used. The lung was approached through an incision in the third intercostal space, anteriorly. Rib spreaders were inserted. The pulmonary vessels were individually ligated. The primary bronchus was then cut across and the lung was removed. To aid in the closure of the bronchial stump, the cartilaginous rings were cut at various points, and the bronchial mucous membrane was carefully sutured with interrupted silk stitches. The thorax was closed tightly and no drainage was employed. Primary union took place in both cases. Each case required three aspirations post-operatively. The pleural cavity devoid of lung was readily filled by expansion of the remaining lung.

### Discussion

Of the six cases of successful pneumonectomy, the one here reported involved the right lung; whereas the other five, as well as Sauerbruch's case, involved the left lung. The technique employed by the several operators varied considerably. The technique followed and the results obtained by Reinhoff are really remarkable. The one-stage operation which he carried out is obviously ideal. It requires a patient in whom the parietal and visceral layers of the pleura are not adherent so that preliminary pneumothorax can be instituted. Shennstone and Janes<sup>13</sup> had already demonstrated the value of pneumothorax as a preliminary to lobectomy. When universal intrapleural adhesions are present, the separation of the lung from the surrounding structures will usually constitute sufficient interference for one sitting; the actual removal of the lung may be effected more safely at a second sitting.

To insure primary healing and to avoid infection Reinhoff emphasizes the importance of minimal injury to the bronchial stump, the avoidance of mass ligatures for the hilum, and the careful approximation of the edges of the bronchial mucosa. He states that intratracheal anesthesia is to be avoided and is not necessary when preliminary pneumothorax has been instituted. However, in the presence of profuse bronchial secretions, as obtains in bronchiectasis, intratracheal anesthesia combined with suction may be a life-saving measure.

The extensive reviews of Whittemore and Balboni,<sup>14</sup> and of Ballon, Singer, and Graham,<sup>15</sup> indicate that pneumothorax, phrenic nerve interruption, and thoracoplasty, in the treatment of well established bronchiectasis of over one year duration, are at best only palliative measures and at times do more harm than good. Simple external drainage of bronchiectatic cavities is also only a palliative means of treatment and has its indications.

When bronchiectasis, not amenable to postural drainage and bronchoscopic therapy, is confined to one lobe of a lung, lobectomy offers a reasonably good prospect for a complete cure. Lobectomy in two stages as practiced by Alexander,<sup>16</sup> or by means of the one-stage method developed by Shennstone and Janes<sup>13</sup> and perfected by Roberts and Nelson,<sup>17</sup> are relatively safe operations in competent hands. In the average case these methods will undoubtedly supersede the exteriorization operation of Whittemore<sup>18</sup> and the cautery technique of Graham.<sup>8</sup> The method of Graham not only establishes drainage but also destroys diseased lung tissue in multiple stages. In the case of the patient reported here, the method of Graham was employed to begin with because of the multiple cavities and the extensive involvement. Amputation at the hilus was effected at the fourth sitting when it appeared relatively safe. On the other hand, pneumonectomy as a primary procedure would have been hazardous in this patient.

NOTE: The author is greatly indebted to the late Dr. Harry Lee Barnes, who referred the patient for operation, to Dr. Howard Lilienthal for many helpful suggestions, to Dr. Isaac Gerber, who interpreted the X-rays, and to Dr. Meyer Saklad, who skillfully managed the anesthesia problems.

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## PHYSICAL SYMPTOMS FROM PSYCHOLOGICAL SOURCES\*

By DR. WALTER C. WEIGNER  
BUTLER HOSPITAL, PROVIDENCE, R. I.

That psychological distress may give rise to physical symptoms is the common knowledge of every physician. We have all learned from observation and experience that behind such physical complaints as vague, shifting pains and aches, pressure sensations, headaches, dizziness, loss of sleep and appetite, tachycardia, constipation, etc., may lurk an emotional disturbance. Thus, when physical complaints are vague and shifting, when they seem consistent with no organic process, when the patient's general attitude and behavior are of the type popularly branded as "neurotic" or "psychopathic," psychological interpretations of these symptoms are accepted without any hesitancy, and the patient treated accordingly. Unfortunately, there prevails amongst many the impression that physical symptoms arising from psychological sources are grossly different from those arising from organic sources, in that they always tend to be numerous, vague and shifting in character, and associated with certain

tell-tale emotional reactions that are definitely noticeable. Those of us who are in intimate daily contact with mental disease cannot agree entirely with this impression. Our experience has been that, while the physical symptoms in the majority of cases of mild emotional distress tend to be of those general characteristics, they are not necessarily so in all cases. Thus, we have often been confronted in our mental patients by such symptoms as persistent backache, which, for a year or more, had been interpreted as sacro-iliac strain, but which resisted all treatment, only to clear up promptly on relief from a psychological burden. We have seen cases of abdominal pain that had been attributed to chronic appendicitis, etc., but which persisted after operation, only to disappear when psychological distress was uncovered and removed. We have been confronted by problems of nausea and vomiting which had been unsuccessfully treated as gall bladder or stomach disease, but which responded to psychological treatment instead. In many of these cases, nothing "neurotic" or "psychopathic" had been observed by the medical attendant in the case until long after the physical symptoms had appeared. This is an important point and should be carefully noted, since it suggests that physical symptoms may be among the first expressions of emotional disturbance, and that physical symptoms of psychological origin are not necessarily accompanied by noticeable and gross mental aberrations. As a result of observations such as these, we believe that physical symptoms of psychological origin are not necessarily vague, shifting and indefinite in character, but that they may be solitary, persistent and at times distressingly similar to those found with certain types of organic disease.

It is not the purpose of this paper to enter into a discussion of those intricate workings of the mind and personality that make for physical symptoms. It is, instead, to discuss physical symptoms only and to emphasize three things:

1. That physical symptoms of psychological origin are not necessarily numerous, vague, inconstant and shifting in their nature.

2. That physical symptoms of psychological origin may be solitary, persistent and apparently genuinely distressing.

3. That physical symptoms of psychological origin may simulate those ordinarily associated with certain types of organic disease, such as chronic appendicitis, sacro-iliac strain, peptic ulcer, chronic gall bladder disease, neuralgias, etc.

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It is also the purpose of this paper to review the difficult problem of differentiating those physical symptoms which are psychological in origin from those which are organic. It is that in which the average practitioner is interested. If persistent, distressing pain in the right lower quadrant, for example, can arise from psychological sources, as well as from chronic appendicitis, the primary interest of the physician is how to differentiate one etiology from the other. What, then, are some of the difficulties that one encounters in evaluating this general problem?

The first great difficulty rests in the physician himself, and is one that he must overcome. He must overcome the unwholesome emphasis upon purely physical concepts of disease that is the natural result of our type of medical education, in which we learn a great deal about the body but practically nothing about the individual. He must catch sight of the fact that the individual is not a body, but is, instead, an embodied mind. He must learn to view his patient not merely as a complex biological machine, but he must also take account of that powerful, motivating current called the mind. He must, by study and observation, develop an appreciation of the role that the mind plays in controlling and qualifying bodily functions. In his intimate contacts with physical symptoms, he must learn to note the association and relationship of psychological distress. If he will do this, he will develop a psychological as well as a physical conception of sickness, and he will sense the mental as well as the physical factors at play in his patient's illness. He will always include in his differential diagnosis of certain types of physical symptoms the possibility of a psychological origin for them.

This whole subject of physical and psychological conceptions is not merely of philosophic value. It has a definite and practical bearing upon the scientific practice of medicine. The physician who entertains physical concepts of disease only tends to evaluate all physical symptoms primarily from an organic point of view. Consequently, those physical symptoms which are merely disguises under which psychological distress masquerades, serve as diagnostic and therapeutic stumbling blocks to him. The importance of a balanced, psychological, as well as physical concept as to the origin and nature of certain physical symptoms is apparent when we consider that the physical disguises of emotional distress may simulate the symptoms that we ordinarily associate with certain organic conditions.

To emphasize the need for a balanced approach to the problem of physical symptoms, let us for a moment portray that which is liable to happen when the approach is according to physical concepts only. When, for example, a patient applies to the physician for relief from some particular symptom, there follows, of course, a search for some organic cause. That is as it should be. The physician does a physical examination; he perhaps invokes the aid of the laboratories for special tests; he avails himself of the X-ray, the electrocardiograph, etc., if their use is indicated. In most cases a definite organic pathology is found, which can be placed into a scientifically honest, causal relationship to the physical symptom. Frequently, however, no such scientifically honest, causal relationship can be found. Frequently the data, as revealed by even the most thorough physical studies, is not conclusive. This is a situation that should immediately prompt the physician to suspect the possibility of a psychological basis for the symptom. Whereas the physician should, at this point, undertake an investigation of his patient's mental life to evaluate the possibility of psychological factors, the physician with physical concepts only will not do this. He will not be able to see beyond his physical concepts and, consequently, he will settle upon some indefinite organic interpretation for his patient's complaint and institute physical treatment—perhaps drastic. He may, of course, be correct in his deductions, but if, perchance, the symptom is from a psychological source, he will be in error. To treat in a physical way those symptoms which are vague and inadequately substantiated by organic findings, without considering possible psychological sources for them, is dangerous. It is very apt to lead to a patient who is neither rid of his complaint, nor satisfied with his physician. It is, of course, obvious at this point that it is just such an approach as this that is responsible for those thousands upon thousands of dissatisfied patients from whom prevailing healing cults extract a nourishing existence, taking millions upon millions of dollars from legitimate medicine. The frequency of physical symptoms of psychological origin makes it impossible for any physician to escape from this difficult problem of differentiation and evaluation. To guard against this danger, the physician should, in every case where the physical symptoms are inadequately or inconclusively substantiated by physical findings, consider in his diagnosis the possibility that psychological factors may be responsible for the symptoms. Unless he



does so, he is very apt to be completely misled by the physical disguise under which psychological distress masquerades. Unknowingly he will attempt physical treatment for what is really a psychological disorder—which is about as successful as trying to run a gasoline engine on steam.

It was previously stated that the practitioner's chief interest in physical symptoms arising from psychological sources, is how to differentiate them from those arising from organic sources. Criteria upon which this differentiation may be made are difficult to establish. There are very few physical symptoms that can be viewed by themselves and branded with certainty as being psychological, rather than organic, in origin. For example, given a patient who complains of and demonstrates a glove type of anesthesia over the hand—a type of disturbance that conforms to no possible neurological lesion—it is possible to view that symptom by itself and to label it as being psychological in origin. Suppose, however, that as a symbolic conversion of a psychological burden, our patient has, instead, such a symptom as pain in the back. There is no possible way to view that symptom by itself and label it with certainty as being psychological in origin. It may possibly be due to a degree of sacro-iliac strain; it may be due to several other physical conditions. It is this particular type of symptom that is difficult to evaluate. If that pain can come from sacro-iliac strain, and if it can also come from psychological sources only, the natural question at this point is, "How can one determine one etiology from the other?" There is, in the last analysis, but one way to evaluate such a symptom, and that is to evaluate the total situation of which that symptom is but a part. If, for example, the patient appears to be of a wholesome personality make-up; if the mode of onset of the symptom was typical of the suspected organic condition; if the clinical features of the pain, disability, etc., were characteristic of the suspected organic condition; and if the process responded normally to treatment, there would be little reason to suspect other than a physical cause. If, on the other hand, the onset was a bit atypical; or if the clinical features of the complaint and disability were not just what one should expect; or if the complaint seemed to be peculiarly resistant to treatment; or if the patient showed evidence of an abnormal and unwholesome personality make-up; or if the patient at the time seemed to be struggling with some difficult situation and in psychological distress; or if the disability seemed to be serving

some comforting purpose in relation to this emotional distress, then, by putting all these factors together as one would the pieces of a jigsaw puzzle, could we get a picture of the total situation and be justified in suspecting a psychological source for the complaint. Then, of course, should follow a careful appraisal of the patient's mental life. By friendly, tactful approaches, those social camouflages that cover the details of psychological distress should be removed, and constructive psychotherapy administered. It must be remembered at this point that, in dealing with a physical symptom arising from a psychological source, we are dealing with an illness that serves as the patient's most satisfactory solution to some emotional problem under which he is laboring. To remove that illness, without constructively helping the patient to face that problem, is an impossibility. Hence, the need of understanding and help from the physician as given to the patient in the form of psychotherapy. In those cases of physical symptoms arising from psychological sources, friendly, helpful words will be of more curative value than any potions, strapings or physiotherapy.

To emphasize the points previously mentioned, it would be desirable to present several cases, showing physical symptoms from psychological sources, the methods of evaluation, treatment, etc. In the limited time allotted to this presentation, however, it is, of course, impossible to describe in detail more than one such case. The case about to be described was particularly chosen because in it we will see a persistent and distressing abdominal complaint in a young woman who, to casual medical and lay observers, had shown no evidence of any abnormal psychological condition. We will note in the history how her abdominal complaint had been previously evaluated according to physical concepts only. We will see how an operation had been performed according to those concepts, in spite of the fact that organic evidence to account for her complaint had been meagre. We will note that no attempt had been made to evaluate her psychological condition, that her operation brought her no relief, and, lastly, we will see how, as a basis for her physical complaint, was a psychological conflict, which, when alleviated, was followed by complete disappearance of her physical ailment.

The case is that of an American girl, 21 years of age, a second year student nurse. The second day after she arrived at the hospital for her affiliation from a large New England hospital, she complained



of pain in her abdomen, with some nausea. She was, therefore, admitted for observation. The history, as she gave it, was that for about a year she had had periods of abdominal pain, sometimes in the right lower quadrant, sometimes higher, sometimes diffuse throughout her abdomen. She had had nausea, but never vomiting. Because of these attacks, she had been operated upon three months previously and her appendix removed. She had been vacationing at home since. During a week's observation, nothing objective was found to substantiate her assertions of pain and nausea. Her temperature was normal; repeated white counts ranged between 7,000 and 9,000; at no time did she have any spasm of the abdominal muscles; a gastro-intestinal series was normal. Casually she appeared to be a bright, intelligent, wholesome and emotionally stable girl. On finer psychological scrutiny, however, she seemed unperturbed about her illness, about the time she was losing from her work, etc. Instead, she seemed passively content with her lot. Because of this general situation, a record of her previous illnesses and of her recent operation was procured from her hospital. In it, it was stated that she had been admitted to her own hospital infirmary for pain in her abdomen. No mention was made of her temperature or white count at that time. No gastro-intestinal series, apparently, had been done. One concluded from the record that she had shown at that time no objective evidence of her being sick organically. On the second day after her admission, however, she had been operated upon for chronic appendicitis. The pathological report on the appendix was "chronic appendicitis." Thus, the operator must have felt that his diagnosis had been confirmed and his approach to our patient's problem, through physical concepts only, justified. Subsequent events, however, proved otherwise. The fact that she experienced no relief from her pain and nausea after her appendectomy suggests that, if her appendix had been chronically fibrosed, it had nothing to do with her physical symptoms. It also suggests that her so-called "diseased appendix" had been normal for her, just as it is felt by some pathologists that it is normal for all individuals after the age of six. So, we now have our patient operated upon, but still ill with her same physical complaints. Let us now analyze her general life situation to see if we can find some psychological factors that can be placed into causal relationship to these physical complaints.

In the first place, she was an only child—a situation which, in many instances, constitutes a psycho-

logical disease by itself. Her mother had been a nurse and had, from the time that our patient was a child, directed her thoughts toward nursing. In spite of the fact that our patient was of the artistic, aesthetic personality type, she had entered nursing really against her own wishes, but in deference to those of her mother. One year went by without any great difficulties. Then came the abdominal pain and nausea. Our patient went to her mother often, suggesting that she could not go on with nursing; the physical demands of the work, she pointed out, were more than her health could stand. But her mother encouraged her to try a little longer; perhaps she could conquer her physical disability, she said. Our patient was in love; she wanted to marry. A very promising position had been offered to her fiancé if he would get married and go out West, but our patient had one and one-half years more of nursing, which she, with her artistic leanings, tremendously disliked. Her pain grew worse. She finally reported it to the hospital and was promptly operated upon. Immediately subsequent to the operation, our patient noticed remorse and sympathy in her mother's attitude toward her. She capitalized the opportunity and extracted a promise from her that she might give up nursing. Our patient recuperated; she felt fine; she had no pains. She vacationed for three months, enjoying perfect health. Then, suddenly, her mother's attitude changed. She spoke of our patient returning to nursing. She stated that, since the cause of her past illnesses had been removed, she could now probably finish the remainder of her course without any trouble. Under the force of her mother's emotional domination, our patient returned to nursing. The second day after her return, her old nausea and abdominal pain also returned. Throughout the recitation of her story, our patient was anything but calm and steady. Marked emotionalism was in evidence. At times she wept; at others she laughed uncontrollably. In all, she was markedly unstable and upset. So, it is obvious that in our patient's general life set-up was a painful psychological situation. She was temperamentally unsuited for the profession which her mother had emotionally forced her into. She wished to leave it to marry, but she wanted to make the break honorably and without hurting her mother's feelings. Illness, of course, offered her the best way out of her situation. Certainly no one could blame her for being sick, and no one could criticize her leaving nursing if she was unable to carry on because of illness. Removing her appendix did nothing to assuage the

pain of her psychological distress—hence the failure of the operation to rid her of her symptoms. In a sense, they constituted her trump card by which she intended to win psychological peace and contentment. Until she had attained those ends, she could hardly be expected to give them up. Because of the psychological implications of our patient's illness, her superintendent of nurses called her mother into consultation and advised that she give up nursing—ostensibly for physical reasons. To this the mother acquiesced in sympathy for her daughter. Our patient returned home; her pain immediately disappeared. In six months she was married and to date one and one-half years have gone by and there has been no recurrence of her symptoms.

In connection with this case, it is interesting to note a report on one hundred cases operated upon for chronic appendicitis, which appears in the 1932 issue of *General Medicine*. Of these one hundred cases, forty-two reported that they were not satisfied with their operations, and that they still had the same symptoms as before operation. The author does not mention anything concerning the mental condition of that forty-two percent, but such an investigation might be revealing in the light of the case just described. The author concludes from his series that there is no agreement of opinion as to what constitutes the clinical or pathological picture of chronic appendicitis. While he does not wish to be understood as believing that there is no such entity as chronic appendicitis, he does believe it is not nearly as frequent as it is thought to be. He points out that the lack of relief of symptoms of forty-two per cent of cases in his series, and forty per cent of cases usually, who have had appendectomies for chronic appendicitis, is a serious indictment against that diagnosis and treatment.

It would hardly be proper to close a discussion on this subject without at least mentioning the psychological implications of several very common physical conditions, such as constipation, mucous colitis, insomnia and high blood pressure. As we all probably know from personal, as well as from professional experience, the functioning of the gastrointestinal tract is very sensitive to disturbances of the emotional life of the individual. Constipation, or a tendency toward diarrhea, almost invariably accompanied emotional stress and strain. These facts should suggest that the problem of constipation warrants more than the use of cathartic drugs, or special diets. The relationship between mucous

colitis and nervousness is well known, even if not always apparent. Thus, Osler defines mucous colitis as a secretion neurosis of the lower bowel occurring in individuals of a nervous or hysterical make-up. Murray states that an emotional condition is the real basic problem with colitis. Barger states that whatever is the cause of constipation is the cause of colitis. Both these conditions—constipation and resultant colitis—may, of course, be secondary to some other organic pathology, but the powerful role that emotional distress plays in the production of constipation warrants the serious consideration of psychic factors in all such cases.

The relief of habitual insomnia by sedatives or hypnotics is generally unsatisfactory. Practically all patients so afflicted and so treated will attest to the truth of this statement. That habitual insomnia is an expression of psychological tension under which the individual is laboring is not difficult to understand and accept. Hence, the need for a balanced psychological, as well as physical, approach to that problem.

Nephritis and arteriosclerosis are not always accompanied by an elevation of blood pressure. That is the observation of internists. That many individuals without nephritis or arteriosclerosis, or any other tangible physical disease, show hypertension is the common observation of almost every physician. The role of the emotions in regulating blood tension can easily be understood. Hence, the advisability of treating all cases of high blood pressure by a combined physical and psychological approach. An esteemed and honest practitioner in our midst has stated that he treats cases of hypertension as he would a neurosis, with better than usual results.

In closing, it is hoped that the impression has not been made in this discussion that psychological approaches to the physical problems mentioned offer any diagnostic or therapeutic panacea—not at all. Psychological distress related to physical symptoms is often difficult, or even impossible to uncover. In many cases, even if successfully bared, the revelations simply present social difficulties, under which the individual is laboring, that are well nigh impossible to remove, or even materially alter. It is, instead, hoped that the need of a psychological, as well as a physical, approach to the problems of certain physical symptoms has been emphasized in order that our understanding of them may be fuller, more scientific and helpful, and our value to our patients thereby increased.

# THE RHODE ISLAND MEDICAL JOURNAL

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FREDERICK N. BROWN, M.D., *Editor*  
309 Olney Street, Providence, R. I.

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## EDITORIALS

### OUR HOUSE IN ORDER

Much has been said and written of late regarding the status of the medical profession under the social revolution which, believe it or not, is upon us. Largely twaddle, most of these utterances can be summed up in three or four sentences: *The profession is overcrowded. We are doing more and more charity work. We are losing patients to public clinics and to irregular practitioners. What can we do about it?*

Certainly there is nothing novel in the observation that the profession is overcrowded; nor is the medical profession unique in this respect. We venture to assert, however, that elimination of incompetents and undesirables would do away with overcrowding in practically every profession.

It has been suggested that limitation of enrollment in medical schools be instituted to diminish the annual increment of neophytes to our ever-swelling ranks. We doubt if this is much more practical than the crop-reducing program of the A.A.A., which has gone completely haywire in just



one abnormal season. Total ablation of second- and third-rate schools, plus more careful selection of applicants by Class A schools, laying emphasis on personality and adaptability as well as scholastic standing, might be of some help in this direction.

Charity work is and ever has been part and parcel of the physician's task. The poor are always with us and always will be. Why not stop beefing about it and divide it up a bit more: a definite ratio of patients to doctors in any free clinic, increasing the staff to meet any increase in the size of the clinic?

The competition of quacks and irregular practitioners of all denominations is nothing new to us. We must admit, however, that they are more numerous, better organized, and more influential politically than in the past. The objections to these irregulars as a class—the attributes which render their activities a menace to the health of a gullible public—are chiefly these: incompetence, commercialism, and dishonesty. Incompetence may arise from faulty or inadequate training or from mental and physical factors which no amount of training could overcome. In many cases both sets of causes are operative. The mercenary motive seems a deep-rooted and integral element in the present-day struggle for existence. Yet in the supposedly altruistic practice of the healing art it seems strangely incongruous. The particular brand of dishonesty that marks the quack and the irregular applies principally to exorbitant advertising claims, (a job for the Better Business Bureau!) and the treatment of imaginary maladies suggested to the patient by the healer himself.

Before we start heaving boulders at the cultists, we had best examine our own position and inquire if we ourselves are culpable of any of the crimes of which we accuse them. If after strict examination we can say to ourselves in all sincerity that in us there is no hint of incompetence, no taint of commercialism, and no dishonesty or infidelity in our relations with our patients and our colleagues, then our position is sound. If the answers to our self-questioning leave room for doubt on any of these matters, then it is time for us to clean house.

To attempt to legislate quacks out of existence under our present political system is worse than useless. It behooves the true disciples of Aesculapius to prove by their actions their superiority over these false prophets in every branch of the healing art; and to prove it so conclusively that it cannot be

doubted even by the veriest moron. This is no mean assignment. It is worthy of the best that is in us. By the time we have accomplished it a paternalistic government will doubtless be giving every physician a six months annual vacation (with pay), thus neatly solving the problem of overcrowding.

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## LABORATORY GUIDES IN MEDICAL PRACTICE

Common sense must always be the watchword of the busy practitioner. A great deal has been said, and with good reason, about the tendency of the modern medical man to lean unduly upon the laboratory in the matter of diagnosis and to forget the use of eyes, ears and hands. Yet it must be admitted that without the aid of special tests in the fields especially of bacteriology, chemistry, clinical microscopy and X-ray, we would be back in the dark ages floundering helplessly and relying on clinical guesses, shrewd perhaps, but often wrong. The wise practitioner, too busy to waste time on frills that may make his work seem "scientific" to his patients, knows when laboratory tests are indispensable and conclusive, when they are merely helpful, and when they are superfluous, an added and unjustifiable waste of time and money. He has equipped himself to do some things for himself and is seldom driven to the indefensible practice of sending urine samples to the public laboratories for analysis. He makes it a rule to use the leucocyte count routinely as an aid in studying infections. The triple ideal of Osler, "The library, the laboratory and the nursery; books, balances and bairns," is in his mind. But though he knows that a throat culture or sputum test may be decisive in the diagnosis of diphtheria or pulmonary tuberculosis, he does not ever try to shift the responsibility for solving his clinical problems to the shoulders of the man who, for example, does his blood chemistry and interprets his X-rays or electrocardiograms. In other words, the clinician, if he be worthy of the name, keeps his own hand on the tiller, accepting this or that aid in charting his course, but always realizing that, after all the laboratory reports are in and all the opinions of consultants, if any, have been recorded, it is he and he only who must make the final decision.

## IMPORTANT NOTICE

The following letter from the Department of Commerce at Washington, D. C., has been received by the Secretary of the Rhode Island Medical Society.

DEPARTMENT OF COMMERCE

Bureau of Foreign and Domestic Commerce  
Washington

June 22, 1934.

Dr. J. W. Leech, Secretary,  
Rhode Island Medical Society,  
167 Angell Street,  
Providence, Rhode Island.

Dear Sir:

In connection with our report to the United States Senate on National Income 1929-1932, we sent out to physicians and surgeons several thousand questionnaires, for anonymous return, and thus collected from every section of the country a fair sample of data on which to estimate total income from practice in the medical profession. Our report was printed as Senate Document 124, and a brief summary is enclosed.

The average net income from practice (tabulated in our report in Table 181 as "per capita income withdrawn") for the years 1929 through 1932 is shown below; it is the result of our survey by questionnaire:

1929.....	\$5,602	1931.....	\$4,544
1930.....	5,307	1932.....	3,442

We are now preparing a report, for release this fall, of national income in 1933, and while it is not feasible at this time to gather new data by the questionnaire method, a reasonable figure could be arrived at by using the trend of average income furnished by the Medical Association of each State. I shall therefore greatly appreciate an expression of opinion from you as to whether the average income of physicians and surgeons from practice, in your State, tended to show an increase in 1933 over 1932, of a decrease, or no change. The degree of change could be roughly indicated as an approximate percentage.

For your convenience in replying, I am sending this letter to you in duplicate, with the request that you check off your estimate on the diagram given below and return one copy to me as soon as possible, in the enclosed official envelope which requires

no postage. Your reply will, of course, be considered confidential, and your expression of opinion will prove most helpful.

### *Change in Average Net Income of Physicians and Surgeons from 1932 to 1933*

	5%	10%	15%	20%	25%	No change
Increase	_____	_____	_____	_____	_____	_____
Decrease	_____	_____	_____	_____	_____	_____

Very truly yours,

ROBERT F. MARTIN,  
*Senior Economic Analyst,  
Division of Economic Research.*

August 11, 1934.

Please reply at once. We hope to complete this work within a month.

In the hope that publication and dissemination of the fact that physicians' incomes have suffered a marked decrease during the depression may have some effect toward stilling the clamor about the high costs of medical care, I urge the members of the Rhode Island Medical Society to send me *anonymously* a statement of the percentage of change in their income of 1933 as compared with that of 1932.

This information, *anonymous* and *confidential*, will be forwarded to the Department of Commerce.

J. W. LEECH, Sec'y.

## NOTICE

To insure prompt attention, the readers of this JOURNAL are advised: That matters pertaining to advertising, mailing and accounts should be addressed the Business Manager, Dr. C. W. Skelton, 106 Francis Street, Providence, R. I.

Other matters, books for review, notices, manuscript, letters, reports of meetings, and all affairs of literary nature should be addressed to the Editor, Dr. Frederick N. Brown, 309 Olney Street, Providence, R. I.

## SALYRGAN: ITS USE OVER AN EXTENDED PERIOD OF TIME TO RELIEVE CARDIAC INSUFFICIENCY

By LOUIS I. KRAMER, M.D.

108 WATERMAN STREET, PROVIDENCE, R. I.

We are all aware of the usefulness of salyrgan to relieve cardiac distress associated with edema. However, because of the irritant effect of mercurials on the kidneys, its prolonged use has been accompanied by some degree of trepidation. Recently instances of its frequent use for extended periods without producing any serious ill effects, have been reported in the literature.

Dixon<sup>1</sup> reports a case under his observation suffering from arterio-sclerotic heart disease, who in twenty months has received at least 150 injections of the drug without demonstrable ill effects. Smith<sup>2</sup> has used salyrgan in a patient over a period of three years without showing any evidence of renal damage. Wiseman<sup>3</sup> has met with similar success. This case report is added to the literature to stimulate further confidence in the use of mercurials as a diuretic to relieve cardiac inefficiency, and to point out, again, its comparative safety.

CASE REPORT: Mrs. A. T., white female, age 52, was admitted to the Charles V. Chapin Hospital, psychopathic department, on May 25, 1932, because she has shown herself at home to be unmanageable and has had delusions of persecution. Her physical status was that of complete cardiac collapse, i.e., marked orthopnea, cyanosis, precordial pain, rapid pulse and edema of the sacrum and lower extremities.

The past history is essentially negative. There is no history of rheumatic fever, or influenza. She was married at the age of 35 and has one child, now, 14 years old. Her husband left her about five years ago and it seems that ever since the time she was deserted by her husband she has been going downhill both mentally and physically. I shall not go into her mental condition, in as much as it has no direct bearing on her heart condition, although as her

physical condition improved she became mentally more co-operative.

Summarizing briefly the positive findings, we have a well developed, obese, middle-aged woman, dyspnoeic, restless, and in acute distress. Fine crepitant rales in both lungs, particularly the bases. The heart is enlarged to the left, and there is a systolic murmur at the apex and heard over entire precordium. Blood pressure 220/150. Ascites and pitting edema of legs present. The laboratory findings are as follows: Urinalysis on many occasions revealed a trace of albumin, rare hyaline cast, few red blood cells and a specific gravity varying from 1012 to 1028, phenolsulphothalein test (5/27/32) first hour 2.5% and second hour 13% or a total of 15.5%, while a repeat phenolsulphothalein test (6/24/32) gave a reading of 16% first hour and 16% second hour, or total of 32%. The blood Wassermann and spinal fluid Wassermann were both negative. The non-protein nitrogen determinations on several occasions varied from 30 mg. per 100 c.c. of blood to 41 mg. An electrocardiogram taken August 25, 1932, was interpreted as left-sided preponderance with arborization block.

The treatment consisted of complete bed rest, Karell diet for two weeks followed by obesity diet with a low protein ratio, and potassium chloride in place of ordinary table salt. Digitalis was not well tolerated. The patient improved rapidly and was discharged from the hospital August 28, 1932, and the following notation was made on the chart. "The patient was critically ill on her admission to the hospital, suffering from cardiac decompensation and showing evidence of an acute exacerbation of a chronic nephritis. Mentally she was irritable and unco-operative, making unreasonable demands on the staff. With treatment her decompensation was relieved and her hypertension benefited. She was placed at first on a Karell and later on an obesity diet and lost approximately 35 pounds. As her physical condition improved, mentally she became more co-operative. Her disposition was better and she adapted herself fairly well to the hospital routine." Her blood pressure on discharge was 170/90. When leaving the hospital she was able to be up and about without too much discomfort. However, soon after she got home she began to do more than she was warned to do, such as climbing stairs, and going to the movies. Her compensation soon broke and it was again, necessary to hospitalize her. And on October 24, 1932, she was admitted to the Rhode

1. Dixon, Ira M., M.D. Salyrgan: Its Long Continued Use in Cardiac Insufficiency with Latent Edema. *New England Journal of Medicine*, April 12, 1934, p. 800-802.

2. Smith, C., M.D. The Use of Salyrgan in a Patient Over a Period of Three Years, for Recurring Ascites and Edema Associated with Cardiac Failure. *Jour. A. M. A.*, Feb. 17, 1934, p. 532.

3. Wiseman, J. R., M.D. Prolonged Use of Salyrgan as a Diuretic: Report of 270 injections in five years in one case. *Jour. A. M. A.*, July 9, 1932, p. 114-115.



Island Hospital in complete decompensation. Bed rest and diet was of no avail. The patient was gradually losing ground. She was edematous from her waist down, and her abdomen was tense with ascites. Her condition became alarming, and in spite of the evidence of kidney damage as shown by urinalysis, I felt that I was justified in attempting radical therapy. I started her on salyrgan. She received her first intravenous injection of this drug on the 19th of November, 1932, and continued at two- and three-day intervals for 10 months and weekly intervals thereafter. At first the salyrgan was preceded by amm. chloride, 90 grains a day. Later this was found unnecessary, in as much as the response was equally effective without the use of ammonium chloride. The output following the first intravenous injection of 1 c.c. of this drug was 5820 c.c. in 24 hours. However, in spite of the continued profuse diuresis the patient did not become edema free, and on the 30th of March, 1933, an abdominal tap yielded 12,360 c.c. of a thick, yellowish fluid, and on June 9, 1933, another abdominal tap yielded 6,720 c.c. of a similar fluid. The salyrgan was continued as before the paracentesis was resorted to. Following this procedure the patient began to improve very rapidly and on the 17th of August, 1933, she left the hospital feeling very comfortable. She continues to receive 1 c.c. of salyrgan at weekly intervals, and the diuresis is as prompt although not as profuse as at the beginning. The average response now varies between 3000 c.c. and 4000 c.c. in 24 hours. To date she received 170 intravenous and 10 intramuscular injections of this drug (1 c.c. doses) without showing any change in her renal efficiency. The blood urea nitrogen June 11, 1934, was 16.77 mg. per 100 c.c. of blood, and urinalysis showed a trace of albumin, rare hyaline cast, no red cells, and a specific gravity of 1029. The blood pressure fluctuates between 190/100 and 175/95.

The patient is fairly comfortable, edema free, and is able to be up and about the greater part of the day. The rales in the chest persist. She is able to look after her own needs, such as preparing her own meals and making her own bed. She undoubtedly owes her comfort and comparative well-being to the therapeutic effect and persistent use of salyrgan. It would seem that the use of this drug, when indicated, is justifiable even in cases with pre-existing renal damage.

## PHYSIOTHERAPY AND INFECTIONS OF HAND

By EARL A. BOWEN, M.D.

669 PARK AVENUE, CRANSTON, R. I.

The treatment of infections of the hand may be divided into two parts: 1. Adequate drainage. 2. Restoration of function.

Part one is the province of the surgeon and he should approach his problem with the same seriousness as he does a laparotomy. He must know when to cut, where to cut, and how much to cut in order to prevent the spreading of the infection with its consequent deformities or possibly the death of the patient.

Next, he must not keep up wet dressings too long, resulting in boggy tissues, because if the incisions have been properly made, forty-eight hours of constant moist dressings is sufficient for the majority of cases. Then dry heat in the form of a cradle of electric lamps should be applied three hours daily.

Now for part two. After five days, the infection should be under control and the physiotherapist should be called in. The problem of restoration of function should not be delegated to the nurse because she has neither the training, experience, patience, nor enthusiasm for this kind of work. At this time, the surgeon should remind both physiotherapist and patient that except during manipulation, the hand should always be maintained in the position of function, i.e., like the hand of a baseball player grasping the ball.

All early procedures of passive and active motion should take place in a saturated solution of boric acid at 110° F. gradually working up to a period of thirty minutes. When all incisions are healed the whole arm should be thrust into a whirlpool bath at 110° F. for thirty minutes. This bath loosens up adhesions and should be followed immediately by massage, and passive and active motion for another thirty minutes. This last treatment should be given at least three times a week. In order to sustain the morale of the patient, it is wise to recommend home exercises such as playing tennis, using the typewriter and squeezing a soft rubber ball.

In conclusion, let me emphasize three points:

1. Proper incisions should be made to insure adequate drainage.
2. Constant wet dressings should be discontinued on the third day, and dry heat instituted.
3. The physiotherapist should be called in after five days and if this is done, convalescence will be measured in terms of weeks rather than months.

—Reprinted from *The Physiotherapy Review*  
Nov.-Dec. 1933.

## SOCIETIES

### THE RHODE ISLAND MEDICAL SOCIETY

Dr. Chas. F. Gormly, chairman of the Medical Emergency Relief Committee of the Rhode Island Medical Society, made a verbal report of the activities of his committee. Several meetings of the committee have been held, and preceding this final meeting a conference was held with the Governor and other members of the State Emergency Relief Commission. At this meeting it was urged upon the State Emergency Relief Commission the willingness of organized medical profession to cooperate with the Commission in the furnishing of medical relief to the indigent sick on the State Relief rolls, such medical services to be paid to the physicians from Federal Funds allocated to the State Unemployment Relief Commission.

The following basic policy and procedure based upon regulations No. 7 issued by the Federal Administrator of the Emergency Relief was presented to the State Emergency Relief Commission.

It was voted that the report of the committee be accepted and the committee continued.

#### "PLAN FOR THE MEDICAL CARE OF PERSONS ON THE EMERGENCY UNEMPLOYMENT RELIEF ROLLS"

*The Medical Emergency Relief Committee of the R. I. Medical Society Submits the Following Plan for the Medical Care of Persons on the Emergency Unemployment Relief Rolls*

The R. I. Medical Society recognizes and appreciates the necessity for the intervention of the Federal Government in giving Medical Relief to the distressed and sick on the Unemployment Relief Rolls. For this purpose the Federal Emergency Relief Administration makes available funds that can be used under certain specified conditions defined in Rules and Regulations No. 7. (These rules and regulations are set out in detail in the *Journal of the A.M.A.* of September 23, 1933.)

That these benefits may accrue both to the unemployed sick and to the family doctor who has in a great many cases given medical services without hope of remuneration, we offer this plan.

#### Policy

The basis of the policy is an agreement between the State Relief Administration and the organized

medical profession to recognize the traditional family-physician relationship and an agreement by the physicians to furnish the same type of service to an indigent person as would be rendered to a private patient. That such service shall be a minimum, consistent with good professional judgment and shall be charged for at an agreed rate.

#### Procedure

A uniform procedure for medical care in the home shall be established by each local relief administration as follows:

(1) All authorizations for medical care shall be issued in writing by the local relief officer prior to the giving such care except that telephone authorizations shall immediately be followed by such a written order.

(2) Acute Illness—Authorizations for the medical care of acute illness shall be limited to a definite period and a maximum number of visits. Medical care in excess of this can only be authorized following investigation by the local relief officer.

(3) Chronic Illness—Medical care for prolonged illness shall be authorized on an individual basis and visits shall be limited in frequency by agreement.

(4) Obstetric Care—Authorization for obstetric cases in the home shall include an agreed number of prenatal visits, delivery in the home and proper post-natal care.

(5) Fee Schedule—The fee schedule shall be determined by agreement between the local relief administration and the local organized profession. All fee schedules shall be established on a basis of an appreciable reduction from the prevailing minimum charges in the given locality.

#### Authority

All agreements between local relief administration and the local medical profession must have the approval of the State Emergency Relief Administration.

Local relief administration shall request the president of the local district medical society to appoint a committee to advise them in the formation and adoption of these agreements and to assist them in maintaining proper professional standards and in deciding questions of policy and practice.

Participation in this work shall be open to all physicians licensed to practice medicine in this state

who shall be willing to accept the regulations and provisions of this program.

The local relief administration and the local medical advisory committee in forming an agreement shall give due attention to the details of "Rules and Regulations No. 7 of the Federal Relief Administration."

The Medical Emergency Relief Committee of the R. I. State Medical Society shall act in an advisory capacity with the State Unemployment Relief Administration.

J. W. LEECH, M.D., *Sec'y*

4. "Paraldehyde and Other Hypnotics: Recent Developments," George A. Elliott, Connecticut State Hospital, Middletown, Conn.

Discussion by Drs. Munro, Ekstein, Ruggles, Hughes and Messenger.

An expression of thanks and appreciation to the Staff and Board of Trustees of the Emma Pendleton Bradley Home for their kindness and courteous invitation to hold this meeting at Bradley Home was voted.

Following the meeting a collation was served.

J. W. LEECH, M.D., *Sec'y*

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The regular quarterly meeting of the Rhode Island Medical Society was held September 6, 1934, at the Emma Pendleton Bradley Home, East Providence, R. I., at the invitation of the Board of Trustees and Staff of that institution.

From 3 o'clock until 4 o'clock the Home was open for inspection, giving the members of the society an opportunity to see some of the activities of the institution.

At 4 o'clock the meeting was called to order by the President, Dr. A. H. Miller, who referred to the publication of "Papers of Charles V. Chapin, M.D.," by the Commonwealth Fund. This volume comprises all the published writings of Dr. Chapin, who served the City of Providence for so many years as Superintendent of Health, and Registrar of Vital Statistics, and as a past president of this society.

The President appointed to the Committee on the Board of Classification Dr. E. V. Murphy, Newport, and Dr. Peter P. Chase, Providence.

The following program was presented:

1. "Report of the 1934 Sessions of the American Medical Association," Guy W. Wells, Delegate to the A.M.A.

2. "Function of a Hospital for Children with Nervous Diseases," Arthur H. Ruggles, Superintendent and Chief of Staff of the Emma Pendleton Bradley Home.

3. "Some Nervous and Mental Problems of Childhood; Illustrative Case Report," Charles Bradley, Medical Director of the Emma Pendleton Bradley Home.

Discussion by Drs. Corson and Langdon.

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#### NOTE

The first International Assembly of the Interstate Post Graduate Medical Association of North America to be held east of the Alleghenies is to take place in the public auditorium of Philadelphia, Pennsylvania, November 5th, 6th, 7th, 8th and 9th, 1934, with pre-Assembly clinics on November 3rd, and post-assembly clinics on November 10th in the Philadelphia hospitals.

The public auditorium is located in the University area and across the street from the Philadelphia General Hospital, thus assuring the Assembly close access to an abundance of clinical material.

The aim of the program committee with Dr. George W. Crile as chairman, is to provide for the medical profession of North America an intensive post-graduate course covering the various branches of medical science. The program has been carefully arranged to meet the demands of the general practitioner, as well as the specialist. Extreme care has been given in the selection of the contributors and the subjects of their contributions.

The Philadelphia County Medical Society will be host to the Assembly and has arranged an excellent list of committees that will function throughout the Assembly. A most hearty invitation is extended to all members of the profession who are in good standing in their State or Provincial Societies to be present and enjoy the hospitality of Philadelphia, "The City of Brotherly Love." A list of distinguished teachers and clinicians who are taking part on the program will be found on page IX of the advertising section of this JOURNAL.

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# THE RHODE ISLAND MEDICAL JOURNAL



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# THE RHODE ISLAND MEDICAL JOURNAL

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## ORIGINAL ARTICLES

### REPORT OF THE DELEGATE FROM THE RHODE ISLAND MEDICAL SOCIETY TO THE AMERICAN MEDICAL ASSOCIATION

GUY W. WELLS, M.D.

The annual convention of the American Medical Association held this year in Cleveland was unusually successful and important.

All meetings and scientific exhibits were held in the auditorium which enabled the visitors to get the most with the least expenditure of time and effort. The programs were well arranged and made up of timely subjects and maintained the standard of previous meetings. The number of scientific exhibits were, I believe, larger and better displayed than in any previous convention. The interest displayed in the exhibits was great. Particular effort was made by the exhibitors to disseminate clearly the largest amount of information in the most concise manner and shortest time. In fact, had those exhibiting not done so one could have seen only a few of the booths. This phase of the convention will undoubtedly merit even more attention in the future.

The importance of this year's meeting is indicated also by the number of doctors who registered for the various sections, 6,293. It was the fourth largest meeting. I am glad to say ten were from Rhode Island. Atlantic City was chosen for the 1935 convention and many more from this State will probably attend.

Although economic conditions of the past four years have been depressing, the American Medical Association seems to have suffered but slightly. Only a very small decrease in membership exists. The financial condition of the Association is unimpaired, and the scope of its publications has been increased. This is in keeping with the policy of the Association to maintain leadership in the field of scientific medicine. I would recommend to your attention some of the special journals that are printed because of their value in the advancement

of medicine, although at considerable loss financially. The review of all foreign medical literature is another department of the *American Medical Journal* that is unequalled by any other publication in the world.

The address of President Dean Lewis is particularly significant since it is in keeping with the ideals of the profession, namely, that medicine is not a business. He referred with pride to the added responsibilities the profession has cheerfully assumed, and considered it an answer to those critics who do not recognize that the medical profession has always led in the fight for prevention and cure of disease.

In addition, the President further urged that State Societies sponsor post-graduate courses for physicians, such as, I imagine, was done for a brief time in Rhode Island a few years ago, and is now being done by some other states.

President-elect Dr. Bierring, in his address, also stressed the individual relation between patient and doctor as a reason that medicine could never become a business. He advised a closer supervision of medical education by the Association since medical practice and education are so closely related. Dr. Bierring spoke of changing conditions that have stimulated non-medical advisers to bring forth a plethora of plans for regulating medical practice. These, as may well be expected, fail to take into account the fact known longest to doctors—that human beings cannot be treated as machines.

During the past year the Association has vigorously prosecuted work in special fields already established.

Through the work of the Committee on Food, commercial houses are vying with each other for endorsement of their products. In order to gain such a stamp of approval certain high standards must be met, the most important of which is honest advertising. This service is one of great value to the public and should be under governmental control. However, it is doubtful if legal measures could ever be so effective.

Of equal importance to the welfare of the public is the subject of medical advertisement by means of the radio. The House of Delegates adopted a reso-

lution condemning the practice of broadcasting of non-supportable claims for patent medicines, preparations and appliances for curing human ailments. Copies of this resolution are to be sent to all members of Congress. Certainly this resolution has the active support of every doctor.

The work of the Council on Pharmacy and Chemistry is well known to all because of its increased influence on the development of medicine. The extent of the work and the efficiency of this Bureau, however, is realized all too little by the profession and should receive greater attention.

The Council on Physical Therapy has done careful investigative work and prevented exploitation of questionable apparatus. At the same time an attempt has been made to acquaint the profession with reliable information concerning the value of physical therapy.

Bureau of Economics: Because of changed economic conditions generally during the past four years the Bureau of Economics has been of exceptional value to the medical profession and merits a greater interest on the part of the profession. Subjects such as Workmen's Compensation, Contract Practice, Collection Agencies, Health and Accident Insurance and Care of the Indigent have been studied and the results are available to members of the Association.

The report of a special committee appointed to consider a resolution on Health Insurance was of particular interest. Powerful influences within and without the profession are endeavoring to socialize medicine. They have made an insidious but determined beginning of which more will be said. Let me say in passing, if the profession does not wish to be ruled by non-medical, political forces, it had better increase its numbers in organized medicine to actively combat clever propaganda already in circulation. Without making recommendations for any plan, it suggested that any experiment embody the following basic principles:

1. All phases of medical service to be under control of the medical profession.
2. No third party must be permitted to come between the patient and his physician in any medical relation.
3. Patients must have absolute freedom to choose a duly qualified doctor of medicine who will serve them from among those qualified to practice and willing to serve.
4. The method of giving service must retain a

permanent, confidential relation between patient and a family physician.

5. All medical phases of all institutions involved in medical service must be under professional control, it being understood that hospital service and medical service be considered separately.
6. However the cost of medical service may be distributed, the immediate cost should be borne by the patient if able to pay at the time service is rendered.
7. Medical care must have no connection with any cash benefit.
8. Any form of medical service should include within its scope all qualified physicians of the locality covered by its operation who wish to give service under the conditions established.
9. Systems for relief of low income classes should be limited strictly to those below the comfort level of standard incomes.
10. There should be no restrictions on treatment or prescribing not formulated and enforced by organized medical profession.

If these principles are followed I am sure there will be diminished ardor on the part of those desiring to control medicine.

#### *Election of Officers*

Dr. James S. McLester was elected President-elect and Dr. George C. Reinle, Vice-President.

Dr. Olin West was elected Secretary.

Dr. Herman L. Kretschmer was elected Treasurer.

Dr. Warnshius was elected Speaker of the House of Delegates, and Dr. Van Etten, Vice-Speaker of the House of Delegates.

Dr. Roger I. Lee was elected Trustee to succeed Dr. Chester Brown, who became automatically ineligible. Dr. Allen H. Bunce was re-elected.

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#### UNDULANT FEVER\* (*Brucellosis Hominis*)

MORRIS L. GROVER, M.D.  
EPIDEMIOLOGIST  
RHODE ISLAND PUBLIC HEALTH COMMISSION

The past few years have witnessed the emergence of Undulant Fever (*Brucellosis Hominis*) from the category of clinical curiosities to a position of importance as a public health problem. It is

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\*Read before the Washington County Medical Society, July 11th, 1934.

quite probable that the disease has existed without recognition and has afflicted mankind for centuries, but owing to lack of adequate diagnostic methods it has, until recent times, remained shrouded in obscurity.

According to historical record, the causative organism was isolated by Marston<sup>1</sup> in 1859, from the spleen of patients who died of a disease known as "Mediterranean, or Gastric Fever." The Melitensis form of the organism was identified, dated and described as a micrococcus by David Bruce,<sup>2</sup> in 1886. The name "Micrococcus Melitensis"<sup>3</sup> was given by him to this causative organism in 1893. The true host of *M. Melitensis*, or *B. Melitensis*, as it is now called, is the wild goat. This fact was discovered by Zammit<sup>4</sup> in 1905. The Mediterranean Fever Commission, headed by Sir David Bruce, was appointed in 1904 by the Admiralty, the War Office and the Civil Government of Malta. Under the supervision of the Advisory Committee of the Royal Society, this Commission strove, during the period 1905-1907, to fathom the riddle of the epidemiology of Malta Fever. As a result of their investigation, the members of the Commission demonstrated that the ingestion of raw goat's milk was the common source of infection for man. Prohibiting the use of raw goat's milk by the men of the military and naval forces on the Island of Malta resulted in an immediate and rapid decline in the incidence of the disease. Inasmuch as the first recognition of the disease occurred along the Mediterranean Coast, it was early designated as Malta Fever, Mediterranean Fever, Gibraltar Fever, Rock Fever, Neapolitan Fever, and Cyprus Fever.

The first case of so-called Malta fever in the United States was reported in 1905 by Colonel Craig, Medical Corps, U. S. A. The patient was a nurse, who, it was supposed, contracted the disease in Washington, D. C., probably acquiring the infection while nursing soldiers. The same disease was recognized at a shortly later date in nine soldiers from the Philippines. Although Craig had indicated that Malta fever was probably not a rare disease in the warmer portions of the United States, and that cases of so-called anomalous typhoid fever could well be, in reality, infections with the organism of Malta fever, little attention was paid at the time to these observations.

Ferenbaugh<sup>5</sup> and Gentry, about 1911, reported recognizing the disease in five patients in Texas. These cases gave a history of having worked with

goats and drunk their milk. Yount and Looney later reported five cases from Prescott in Arizona. It is interesting to note that in these reports was indicated the probable fact that Malta fever had existed in Texas and Arizona for at least 25 years.

In 1913, at a meeting of the International Congress of Medicine, held in London, the Section of Tropical Medicine recommended the adoption of the name "Undulant Fever" for the disease. This name was first proposed by Hughes<sup>6</sup> in 1896, who believed it to be descriptive of the disease.

The relationship of contagious abortion disease in cattle, and undulant fever in man, was not early appreciated. The causative organism of contagious abortion was isolated by Bang<sup>7</sup> in Copenhagen, in 1897, from the placentas and foetuses of cows; and by Schroeder<sup>8</sup> and Cotton, in the United States, in 1911, from the milk of apparently healthy cattle. Kennedy,<sup>9</sup> in 1914, observed that the milk of cows in London agglutinated the *Micrococcus Melitensis*. This observation probably influenced Larson<sup>10</sup> and Sedgewick in 1915, Nicolle<sup>11</sup> and Pratt in 1915, and Cooledge<sup>12</sup> in 1916, to call attention to the important fact that a fairly large percentage of children consuming raw cow's milk gave positive serum reactions with *B. Abortus*.

The *Micrococcus Melitensis* of Bruce, and the *Bacillus Abortus* of Bang, were for a period of over twenty years regarded as separate, distinct and unrelated species. As a result of a series of intensive studies, Alice Evans,<sup>13</sup> in 1918, concluded that the two organisms were morphologically, culturally, biochemically, and by ordinary agglutination tests, indistinguishable. Evans at that time also stated: "Considering the close relationship between the two organisms and the reported frequency of virulent strains of *Bacterium Abortus* in cow's milk, it would seem remarkable that we do not have a disease resembling Malta fever prevalent in this country." According, however, to the prevalent teachings of the time, undulant fever was an endemic disease occurring along the shores of the Mediterranean Sea, parts of Asia, South America, South Africa, and certain islands of the Pacific Ocean. It was also thought that the disease was contracted only through the handling of infected goats, or through the consumption of raw goat's milk and milk products.

In 1921, Bevan<sup>14</sup> brought attention to the remarkable association of undulant fever in man, and an epizootic abortion in cattle in Rhodesia; in 1924,



Keefer,<sup>15</sup> from a case of Malta fever, isolated from the blood in pure culture, the abortus organism. Carpenter,<sup>16</sup> in 1927, recovered what corresponded with the same organism from the blood of ten cases of undulant fever; inoculation of five pregnant heifers with these cultures resulted in prompt abortion. The observations of Evans, Keefer and Carpenter have been amply confirmed by subsequent studies carried on throughout the world. We, now, definitely know that the organism which causes contagious abortion in cattle, and other domestic animals, also is capable of producing in humans a disease clinically and bacteriologically identical with so-called Malta or Mediterranean fever.

Within the past eight years, physicians throughout the United States have realized, in many instances, an explanation for unconfirmed diagnoses of typhoid-like and malaria-like diseases. As a result, reports of the discovery of cases of undulant fever have since appeared in all the forty-eight states. During 1926, a total of forty-six cases were reported; these were chiefly from New York, Michigan, Illinois, and Ohio. In 1929, every state health department in the Union recorded cases of undulant fever. As a result of these reports, a number of investigators have conducted extensive studies in several states, their objective being to learn of the incidence of the disease in a circumscribed locality. Thus Simpson<sup>17</sup> has studied 142 cases in Dayton, Ohio, and vicinity; Hardy,<sup>18</sup> over 800 cases in Iowa; and Hasseltine<sup>19</sup> of the U. S. Public Health Service, 109 cases in 14 different states.<sup>20</sup> Similar investigations have been made by Carpenter in New York, Huddleson<sup>21</sup> in Michigan, Bierring<sup>22</sup> in Iowa, King<sup>23</sup> in New York, Farbar<sup>24</sup> and Mathews in Indiana, Brown<sup>25</sup> in Kansas, Sensenich<sup>26</sup> and Giordano in Indiana, and Ey<sup>27</sup> in Ohio. These studies have resulted in the discovery of large numbers of cases which would have otherwise been overlooked. It is difficult to get away from the impression that undulant fever is in reality on the increase. The increasing numbers of reported cases is not due entirely to the general awakening on the part of the medical profession and health officials in the diagnosis of the disease. From the evidence already available, we can be assured that undulant fever is not only much more prevalent than is generally believed, but that there is an actual increase in the incidence of the disease.

The first case of undulant fever recorded in Rhode Island appeared in February, 1929. During the autumn of the same year, the diagnosis was

confirmed in two other cases. For the years 1929-1933 inclusive, there were reported in this state a total of seventeen cases. The year 1933 accounted for a total of eleven cases. During the first six months of 1934, a total of six cases were diagnosed and confirmed by agglutination tests at the State laboratories. The writer has detailed knowledge of seventeen of the total of twenty-three cases that have been recorded to date in Rhode Island since 1929. An analysis of these seventeen cases discloses that six were residents of Providence; three, residents of Cranston (one a patient at the State Hospital for Mental Disease); two, residents of Warren; and one case each from Westerly, Hopkinton, Lincoln, Woonsocket and Barrington. Five of the cases were females, and twelve were males. They ranged in age from 11 years to 48 years, with ten of the seventeen falling in the age group 30-40 years. The occupation in this group of cases was not especially significant. All of the seventeen cases gave a history of having consumed raw milk. An examination of the cows from which the milk was obtained disclosed the presence of 20-50% *Brucella Abortus* infection among the herds that were tested.

The result of the work of Alice Evans made it evident that the *Melitensis Abortus* group of organisms should be reclassified. In 1920, Meyer<sup>28</sup> and Shaw proposed that the organisms in this group be designated with the generic name "*Brucella*"; this proposal has since met with universal approval. In the current medical literature, it is customary to discuss at least three strains of *Brucella* genus. The organism associated with goats (caprine strain) is designated as *Brucella Melitensis* var. *Melitensis*; the organism of contagious abortion in cattle (bovine strain) is referred to as *Brucella Melitensis* var. *Abortus*; and the organism found in swine infections is known as *Brucella Melitensis* var. *Suis* (porcine strain). One of the striking characteristics of the *Brucella* organism is its marked tendency to exhibit pleo-morphism. Both coccoid and bacillary forms, as well as ovoid forms, are commonly observed. The many attempts in skilled hands to divide the organisms of the genus *Brucella* into distinct caprine, bovine, and porcine strains have not been uniformly successful. In fact, organisms which have been designated as porcine or caprine have been recovered from cow's milk. In view of the present state of confusion in the designation of names to the disease, and in the uncertainty of strain classification, many workers in the field are inclined towards adopting the single desig-

nation of "Brucelliasis" or "Brucellosis" to the infection.

From the studies of cases conducted by many investigators, it appears that in urban populations the disease is chiefly transmitted through raw milk of cattle infected with the abortus variety of *Brucella*. From the study of many cases in Iowa, Hardy<sup>18</sup> concludes that direct contact with infected cattle and hogs has been responsible for a great number of cases in that State; also that the abortus and suis varieties of the organism are about equally responsible for the undulant fever morbidity. By animal experimentation, Hardy has demonstrated that the skin may serve as a portal of entry of the organism. Morales-Otero,<sup>29</sup> in Porto Rico, has by inoculation of bovine and porcine strains of *Brucella* through the abraded skin of human volunteers, also reproduced the infection. From these results, we may gather, then, that there are at least two important routes of human infection:

1. The ingesting of raw milk or unpasteurized dairy products containing the *Brucella*.
2. Contact with infected animal tissues.

#### *Clinical Aspect*

Undulant fever is frequently confused with a number of febrile diseases, notably, typhoid fever, malaria, influenza and tuberculosis. Less often, it has mistakenly been diagnosed as subacute bacterial endocarditis, acute rheumatic fever, appendicitis, pyelitis, cholecystitis, bronchitis, or tularemia. It is not infrequently the experience of physicians to arrive at a belated diagnosis of undulant fever after Widal reactions have repeatedly proven negative and roentgenographic examinations have failed to give evidence of tuberculosis.

Recent investigations have brought to light the fact that the majority of undulant fever cases exhibit a fairly characteristic clinical picture. From the evidence available, undulant fever appears to predominate among males, particularly in rural sections. Those most often affected are young and middle-aged adults. It is interesting to observe that children appear to possess some degree of immunity to the disease, apparently similar to that exhibited by calves.

The incubation period of undulant fever is variable from five days to four weeks, the majority of the cases having an average period of two weeks. In the typical case, the patient becomes gradually aware of an afternoon or evening rise of temperature, accompanied by marked weakness and asso-

ciated with chills and night sweats. In the early stages of the infection, the patient usually feels quite well in the morning, but during the afternoon or evening, the symptoms of fever, chills and sweats return. As the disease progresses, the nocturnal exacerbations of temperature may reach great heights—temperatures of 106 degrees or 107 degrees F. have been reported. The average maximum afternoon or evening fever is 103 degrees F. One of the striking features that is often encountered, is the remarkable disparity between the subjective sense of feverishness, and the temperatures registered by the clinical thermometer. The patient may not complain of fever or present a febrile appearance, and yet show a temperature of 102 or 103 degrees F. With the subsidence of the fever, chills and sweats are experienced, a rapid defervescence followed by a sweat which is drenching in character. In about one-third of the cases, the chills are severe enough to be regarded as true rigors. Ten percent of the patients do not give a history of chills. Insomnia and restlessness frequently accompany the febrile exacerbations. Occasionally, delirium occurs in cases where the fever is high. As a rule, in spite of the high fever the mental state remains clear. The pulse rate is always accelerated.

The duration of the attack fever varies from one week to many months. While the designation "undulant fever" is aptly descriptive of the relapsing type of the disease, this type appears to be the exception rather than the rule in the recently described American cases. The typical American case will run a febrile course with morning remissions and evening exacerbations for a period of from three weeks to eighteen months, finally reaching a normal level by lysis.

Loss of appetite and constipation are the characteristic gastro-intestinal complaints of a case of undulant fever. The more severe the infection, the greater the degree of constipation. Another almost constant feature of the disease is the marked loss of weight. Severe cases will lose from twenty-five to fifty pounds in weight during the course of an attack.

About one-third of the cases will exhibit a palpable spleen. The same proportion will complain of muscular and joint pains, accompanied by tenderness over the painful areas. Redness about the joints in these cases is, however, seldom encountered. Among the neurological manifestations that may be a part of the clinical picture are: cutaneous hyperaesthesia, persistent sciatica, "eyeache" or



optic neuritis, depression, irritation, anxiety, neurosis and asthenia. Insomnia has been mentioned.

Other findings of less frequent occurrence are unusual skin manifestations in the form of macular lesions, enlargement of the superficial lymph nodes, orchitis and oophoritis. While several investigators have reported abortions and still births among cases, no definite proof was given that they may not have occurred as a result of other causes. In same cases, pharyngitis and bronchitis have been present throughout the entire course of illness.

In about ten to thirty per cent of the cases, abdominal pain forms part of the clinical picture during the acute manifestations of the disease. This has led to surgical operations in a number of reported instances. It is, therefore, a matter of some importance that the surgeon be aware of the characteristics of the disease in order to avoid unnecessary surgical intervention.

The blood picture of undulant fever is that of a secondary anemia—the degree of anemia being usually proportionate to the severity of the illness.

The great majority of cases exhibit a leukopenia with the white blood cell count ranging from 4,000 to 6,000. There is usually a relative lymphocytosis accompanying the leukopenia. Mild cases will often present a normal blood picture.

Urinalysis will, during the febrile course, sometimes show a slightest possible trace to a trace of albumen. In some severe cases, examination of the cerebro-spinal fluid will show a slight lymphocytosis and an increased sugar content.

#### *Clinical Types*

From a clinical standpoint, four types of undulant fever are described:

- |                  |                |
|------------------|----------------|
| 1. Intermittent. | 3. Undulatory. |
| 2. Ambulatory.   | 4. Malignant.  |

#### *Intermittent Type*

Most of the cases which have been carefully observed in the United States fall into this group. The disease follows a subacute course, the fever is intermittent with little or no morning elevation in temperature, sometimes even being slightly subnormal, and an afternoon or evening rise to a range of 101 to 104 degrees F. The duration of this type is from one to ten months, the average being three to four months.

#### *Ambulatory Type*

No particular chain of signs or symptoms characterize the ambulatory type of case, except possibly a marked sense of weakness accompanied by a

slight degree of fever in the evening. Most frequently the symptom complained of is a feeling of lassitude in the afternoon and evening, accompanied by occasional night sweats; about one-fourth of the observed cases fall into this group. It is not uncommon for this type of case to be confused with influenza.

#### *Undulatory Type*

The characteristic feature of this type of the disease is the occurrence of relapses followed by periods of quiescence during which no elevation of temperature or clinical symptoms are exhibited. As the disease progresses, the relapses usually become less intense and are shorter in duration. This type of undulant fever follows a more chronic course than the others. It has been present in about fifteen per cent of the reported American cases. Physical and mental deterioration are more commonly observed in this type than in the others.

#### *Malignant Type*

The malignant type of infection is rarely seen in the United States. During the past three years, it has been encountered more frequently in the Maltese Islands than in former years. A sudden onset, a short, acute course, extreme prostration, a high, sustained temperature, delirium, and severe head and muscular pains characterize this type. Most cases of this type have a fatal termination. The average duration is about three weeks.

#### *Sub-Clinical Type*

A sub-clinical type of infection has recently been described. It is so mild and of such short duration that it usually passes undiagnosed. The symptoms are occipital headache, general aching, weakness, and loss of appetite. The temperature may reach an elevation of 103 degrees F. in the evening. The duration is from three to seven days.

#### *Diagnosis*

It is quite probable that if undulant fever is considered in the differential diagnosis of febrile disease in general, and particularly in cases where there is lack of adequate confirmation in suspected tuberculosis, typhoid fever, influenza, rheumatic fever, bacterial endocarditis, pyelitis, malaria, and chronic bronchitis, the disease would more often be recognized. For a satisfactory examination, 4 or 5 cc. of the patient's blood, drawn in the same manner as for the Wasserman test, is all that is required. Huddleson<sup>30</sup> of the Department of Bacteriology and Hygiene, Michigan State College, has devised a



simple and reliable rapid microscopic agglutination method, which has come to be employed universally in diagnostic laboratories.

Laboratory studies have shown that anti-B. Abortus serum agglutinins may appear as early as the fifth day of the disease; however, in most instances they appear during the course of the second week of illness. It would, therefore, be advisable not to collect a blood specimen until about the tenth day after the onset of symptoms. Occasionally, it has been found that agglutinins do not appear until the third or fourth week of illness.

There is commonly observed a rise in the agglutination titer with the acuteness of the course of the disease, and a decline with the abatement of the fever. During the third to the sixth week of illness, in an average case, the agglutination titer varies from 1:100 to 1:2000, the degree of agglutination being from two plus to four plus.

In addition to the agglutination test, Huddleson<sup>31</sup> employs an allergic test, and an opsono-cytophagic reaction which he combines to determine the status of a given individual with respect to Brucella infection. This system of diagnosis, however, awaits further confirmation.

Studies have disclosed that approximately 5 per cent of individuals with undulant fever, proven positive by blood culture, fail to develop Anti-B. Abortus agglutinins. At the present time, no arbitrary diagnostic agglutination titer criterion exists for the disease. It is accepted, however, that an agglutination two or more plus in a titer 1:100, or above, is of sufficient significance for a positive diagnosis.

The satisfactory isolation of the Brucella organism from the blood stream, and the isolation of the organism from the urine and stool of cases is beset with technical difficulties which make these attempts impractical at present for general employment by diagnostic laboratories. Also it takes as a rule from three to six weeks time of growth on suitable media and conditions before the organisms can properly be identified.

It is interesting to observe that cross-agglutination of the Brucella and the Bacterium Tularensis occasionally occurs. On the basis of this fact, Francis<sup>32</sup> and Evans have suggested that all serums from suspected cases of tularemia or undulant fever should be tested for both anti-B. tularensis, anti-B. Abortus agglutinins. Should, however, the agglutination titers be the same, or nearly so, agglutinin absorption tests will usually differentiate the two.

### *Prognosis*

Cases reported in the United States have had a fatality rate of from one to four per cent. It is important to bear in mind that the seriousness of undulant fever is not in its death rate, but in the invalidism, incapacity, and economic loss that the infection produces.

### *Treatment*

No specific form of treatment has as yet been conclusively evolved in therapeutics of undulant fever. In general, it has been directed toward the alleviation of prominent symptoms. Intravenous therapy with neoarsphenamine, mercurochrome, and quinine has been reported favorably in the literature. In our own experience with several cases, a course of intravenous neoarsphenamine, which we recommended, has apparently proven beneficial in the prompt reduction of fever and alleviation of symptoms. One case, a patient at the State Hospital for Mental Diseases, seen by the writer, and reported by Dr. Harvey E. Wellman before the Providence Medical Association, not only exhibited a prompt symptomatic recovery, but also showed a definite improvement in her mental condition.

Favorable results with specific vaccine therapy have been reported by many observers. Simpson, in Minnesota, has prepared and utilized a Brucella Abortus vaccine, standardized to two billion heat or formalin killed organisms per cc., which he has personally employed in seventy-two cases. He has also distributed the vaccine to some 400 physicians throughout the United States, who have reported that the vaccine has effected a shortening in the course of illness and a prevention of recurrence. Huddleson<sup>33</sup> has prepared a vaccine which he calls "Brucellin." A recent report of its use in a number of cases with beneficial effect leads the investigator to believe that he may have a possible specific for undulant fever in man.

### *Public Health Aspect*

Far more important than any other consideration is the Public Health Aspect of undulant fever. Our state veterinarians conservatively estimate that 15-30% of the cows in Rhode Island are infected with Bang's disease. From our own observations, this infection is widespread throughout the state; its control is, therefore, particularly difficult, especially in view of the fact that a large proportion of the infected animals eliminate vast numbers of organisms in the milk and vaginal discharges with-

(Continued on page 189)

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FREDERICK N. BROWN, M.D., *Editor*  
309 Olney Street, Providence, R. I.

CREIGHTON W. SKELTON, M.D., *Business Manager*

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## EDITORIALS

### HEIL HITLER

Newspaper reports that hunger, cold, starvation and privation are to be popularized in Germany, as an evidence of patriotism, are, of course, alarming to the American mind, and one wonders how much "Ballyhoo," coercion and terrorism are going to be necessary to carry the point as an excuse of the failure of an apparently incomprehensible dictator.

As we approach the busy seasons of fall and winter, one realizes the patriotic desirability of attendance at medical meetings, but wonders how

much Spartan fortitude is going to be necessary to carry out that conscientious duty.

One cannot wink at the facts that there are not only too many medical and allied meetings which we feel required to attend, but that at least half of them appears a complete waste of Christian time. The average meeting, whether it be State, County, or the ordinary Staff meeting, should stimulate enthusiasm and arouse interest in new phases of medical subjects, and eventually extend our usefulness to our clientele.

Paradoxically they usually do the opposite. Few medical meetings convene on time, and fewer still terminate promptly. The average meeting is medi-

ocre in interest, and the average speaker is somewhat too verbose to be anything but tiresome.

Isn't this the time to call attention to the various chairmen, who are charged with the difficulty of conducting these meetings, to try and make this coming season of activity notable in meetings of "short and snappy" programs devoid of the sedative lethargy of drawling, dragging speech, and run off with the precision and *brevity* of a radio hour?

Surely, any chairman who can accomplish this much is deserving of a niche in the Hall of Fame and a Congressional Medal of Honor. And yet how simple! All one needs is a watch and a stout, sonorous gavel. Let's start on time, and *close* promptly. Let's eliminate the papers produced only for self-advertisement. Let's silence irrelevant "discussion." Let's have, if necessary, censorship and rehearsal to be sure the papers are really worth while, brief, and above all, well delivered. Let's select, whenever possible, good medical "public speakers" instead of hesitant, stage-struck men to whisper their efforts punctuated with interminable "ers" and "ahs."

Must we be "patriotic" by Spartan fortitude in a winter of horror listening to long drawn out, interminable, negative medical meetings?

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### ALCOHOL

The recent study in the J.A.M.A. upon the bearing of alcohol upon automobile accidents would seem to be the first pronouncement of the medical profession of importance in many years upon this important subject. Since the remote time when Atwater and Wylie showed that alcohol was oxidized in the body and gave the liquorists' claim that it was a food we have been very chary of what seems to many our sworn and bounden duty. Our attitude has been one of humoristic toleration. A very large number of physicians and of the other learned professions use alcohol. The position of the reverend clergy has been one of affable acquiescence and the old time temperance sermon has almost disappeared from our ken.

The liquor propaganda, however, has been active and well organized. At the present time almost every food shop is a liquor store, liquor is advertised on almost every printed page, and if it is to be considered a temptation the suggestion is omnipresent. Data upon the economics of alcohol are

voluminous and at present unheeded. This cogent and illuminating article would seem to show that physicians have been distinctly remiss in our professional duty for not having brought the toxicity of alcohol forcibly before our public to, in a measure, offset what is no less than depravity.

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### DRUGS

The appearance on the program of the R. I. Medical Society of a paper on the use of hypnotics and sedatives is most noteworthy.

However, all physicians should be thoroughly posted regarding the merits and demerits of drugs of recent vintage. They should know their drug force that they may not use a sledge hammer to drive tacks and that they may obviate the inconveniences and harmfulness of opium too often exhibited when there is discomfort rather than pain.

Surgeons require a knowledge of drugs of the lesser grades of power for the comfort and convenience of their patients.

There is hardly a more timely subject in medicine. For many years about from one to two hundred new therapeutic preparations have been added to our armamentarium; some of these are of value, many of them even dangerous. They are released to the public in enormous quantities and are often accompanied by misleading and fraudulent literature. Descriptive literature sent to physicians is frequently so extravagant in its claims and so denunciatory of similar products that it may be discarded with casual reading. Whenever a preparation is found that seems helpful it is soon followed by a large number of similarly named products, some of which show but little resemblance. This is particularly true of the barbiturates. It is indeed a well trained mind that can select a suitable hypnotic from the large number of preparations which clamor for attention. It is interesting to find that a drug which has served one well in many difficult and trying cases is either dangerous or worthless and that one has many times jeopardized the life of his patient by a dose which has seemed to act well and which has pleased both physician and patient.

It is well known that medical schools vary in their interest in therapeutics and that graduates carry into their fields of activity varying degrees of confidence in the use of drugs. For this and many other reasons one rejoices that there is evidence of



a revival of interest in pharmacodynamics. It is to be hoped that this will be substantial and long lasting and in a measure offset the flood of inaccurate drug propaganda which is harmful to the progress of medical science and to the professional and public health.

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### WHAT TO DO! WHAT TO DO!

The plight of the doctors is all too familiar to all of us, but as the symptoms develop an amelioration of the disease may be made possible if indeed a cure is not permitted. Under three or four heads it may be touched upon as indicative of the major disturbance.

The matter has been discussed at length by men of allegedly great minds and others in the profession and out of it; by physicians, health officials, lay and welfare workers and through a million dollar (and more) combination of minds known as the Committee on Costs of Medical Care, who, in brief, advises us to locate around a hospital, sectionize the community and collect remuneration (maybe) by taxation, insurance or both—taxation means legislation and doctors certainly do not dominate legislatures. On top of this, at the modest sum of \$4,000 a year, it would cost the state of Rhode Island nearly four million dollars to pay its doctors. And would the taxpayers make a row! Insurance companies are organizations established essentially as business enterprises; out to make money, under this proposition, with the doctor's help. In any event the direction and administration must come from a central head, and under these conditions the doctor ceases to be an entity and becomes a tool. All of which appears to us as an evasive and awkward way of putting us in the category of medical communism.

This proposition is no solution of the doctor's problem.

In the problem of what's what in medical affairs might be mentioned the activities of certain bodies known as Boards of Health, who, assuming administration of a community's health, become at times imbued unconsciously with definite socialistic tendencies in the fact that doctors appear to be regarded as an adjunct to the Board instead of the Board being a help to the doctors. In the Board's concern over the general health of the people it is altogether possible to overreach and by literature and word-of-mouth advise, not only to prevent sickness (with which there is no quarrel), but at

times also advise as to proper medical procedure when a sickness develops.

This might not be termed meddlesome if said Board were to care for the sick in extremity or in emergency. Furthermore, we might be more receptive to this attitude if socialization of medical care was really acceptable and we were under the mantle and regimen of the Board.

If socialization is not the aim, it would be better to wait and help the doctor (if asked to do so), who would not then be shifting his balance from one foot to the other awaiting a chance to attend to his own practice.

We might also mention the ever-growing number of our public clinics and welfare agencies that are eagerly "manned" and made possible by physicians who often rail against abuses; but they stay and stay and take the "rap." Why?

People feel obligated and do pay for coal that they be warm; they pay for gas and electricity that they may have light; they pay for food that they may eat. Why not, therefore, pay the doctor that they may live and not further abuse his philanthropy? Be it understood that this arraignment applies only to the many hundreds who needlessly are permitted to crowd our clinics, the great reason for which is that the public has been educated in free service and it is realized that on the next street or corner is a hospital, clinic or dispensary where everything can be had for nothing. (Why pay a doctor? Who pays for fruit that falls into the hand?) The attendants at these institutions get paid but the doctor just holds the bag.

The answer is largely in our own hands. The doctor, collectively, is the last person on earth to withhold help, especially in tribulation, to the really indigent; but if he continues to live, he must be assured that he is not buying an automobile or building a house for somebody else or working for nothing that another may thrive. Will the physicians of Rhode Island take the initiative in a sincere and determined way to correct conditions, or have we builded a machine to destroy us?

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### DOCTORS' OFFICES AND THE ZONING LAWS

Inflexible rules, ordinances, and statutes seem to have a way of eventually causing unforeseen complications that were never intended by the original framers.

This appears to be the present working of many phases of the Zoning Law of Providence, with particular reference to doctors' offices.

More and more instances appear in which the use of a building for a reputable physician's office is protested or refused, even though it is within a stone's throw of many other such offices and is beyond the pale by but the crossing of a street. Recently an excellent old dwelling was remodelled with rare good taste by the physician purchaser, in such a way as to greatly improve not only the appearance of the property but also the entire neighborhood, and yet when that highly reputable practitioner desired to share his very attractive quarters with another equally high grade doctor, protests flew in from all sides.

Doctors are almost without exception good citizens, highly educated, and gentlemen. They are rather large taxpayers, pay their bills, live cleanly and keep their property up in such a way as to be a credit to the neighborhood. Their offices involve no offensive conditions to neighbors, no heavy, noisy machinery, no trucking, no offensive odors, or troublesome clients.

It is difficult to fathom the mental processes of neighbors who can find objections to the presence of professional gentlemen, of honorable tradition and high calling, and class the quiet, well conducted office as a business nuisance. The JOURNAL deplors that attitude towards our profession that contributes so largely and generously to the sick, and the poor, and the suffering members of the community. It is sincerely hoped that the intelligent members of the Zoning Board will become more and more enlightened in this matter, and be able to look beyond neighborhood peevishness to a liberal interpretation of rules that encourage the establishment of splendid and high grade doctors' offices.

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#### PROVIDENCE COMMUNITY FUND, INC.

In making its annual appeal to the citizens of Providence for funds to carry on the welfare work of thirty-eight associated agencies, the Providence Community Fund stresses two outstanding facts:

*First*, that government relief work, as extensive as it is, can only bring to people suffering as a result of economic conditions, the actual assurance against starvation and freezing.

*Second*, the great work of the welfare agencies is urgently needed during the present period—even more urgently needed than ever before.

The Campaign goal of \$613,254 represents an increase of \$63,254 over amount *actually* raised last year—but is more than \$100,000 less than last year's quota. Note how your contribution to the Providence Community Fund is divided. About 13 cents of every dollar goes for the aid, care, and welfare of children, insuring them protection and training—and preventing suffering from insufficient food, lack of proper environment and necessary medical attention.

Thirty cents of your dollar goes for Health Care and Nursing—for hospitals for motherhood—for the great fight against tuberculosis—for mental hygiene—for the organizations that have been our first line of defense against the terrific inroads of ill health that in periods of economic distress always cause wide-spread disturbance.

Thirty-one cents of your dollar goes for relief and family service—for the prevention of the breaking-up of families—for the care of aged people—for the training of the handicapped. Fifteen cents of your dollar goes to the building of character and the prevention of delinquency. It is cheaper for a community to build good men and women of its adolescent boys and girls than to build jails and houses of correction. Crime costs America 13 Billion Dollars annually. Six cents of your dollar is spent for general services—for co-ordinating the work of various organizations—for Americanization and educational work among foreigners. Two cents goes to defray the expenses of the Campaign itself.

The remaining three cents goes to pay the cost of administration, including the offices of the Community Fund, collections and bookkeeping, supervision of all agency expenditures, and educational publicity.

When you are asked to contribute this year—give as generously as your circumstances will permit. Your gift has *never* been needed more than it is now.

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#### UNDULANT FEVER

(Continued from page 185)

out manifesting symptoms of the disease (abortion, retained fetal membranes, sterility, mastitis, and lessened milk yield).

At the present time, it appears that pasteurization is the most logical method for preventing the transmission of milk-borne undulant fever to human beings. Veterinary science is constantly



striving to perfect simpler and more effective methods for the eradication of *B. Abortus* infection among live-stock. The discovery and elimination of infected animals is a slow process; its greatest weakness lies in the length of time it takes to accomplish the desired result. In the meanwhile, to prevent the occurrence of human cases our sheet anchor is pasteurization. Investigators have conclusively shown that complete pasteurization (143 to 145 degrees F.) for 30 minutes, will destroy the *Brucella*. Pasteurization of milk renders it safe and provides protection, not only against undulant fever, but against all other communicable diseases transmitted through milk.

In order to protect the health of persons whose occupation necessitates the possibility of their coming in contact with the tissues of infected animals and their products, we must rely on the institution of precautionary measures, and on widespread education. Mohler, Chief of the Bureau of Animal Industry, has stated: "Infectious abortion is so widespread and the milk of so many animals is infected that the main dependence for protection against whatever danger there may be from *B. Abortus* in milk, must be placed in pasteurization which, if properly done, will make the milk safe until the dairymen can eradicate the disease from their herds."

Alice Evans<sup>34</sup> has clearly summarized the importance of pasteurization with respect to undulant fever prevention in the following: "For the protection of milk consumers, the preventive measure is quite obviously the same as that practiced for the prevention of other infectious diseases that are spread by milk, namely, pasteurization. Those who are able to pay the price for certified milk may take raw milk with a reasonable degree of safety, *if certification guarantees that the milk is from an abortion free herd*. No milk other than that certified or pasteurized can be considered safe, for the cattle disease is widespread everywhere in the United States. It is fortunate that the preventive measure of pasteurization is so easily available."

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CLINICAL PATHOLOGICAL  
CONFERENCES

CASE No. 2

Presented by Dr. William Newton Hughes

L. C., about 60 years old, was admitted to the neurological service R. I. H. on June 9, 1932, because of unconsciousness and Jacksonian convulsions involving the entire left side of the body, and she died on June 14, 1932, without recovering consciousness or recovering, except for short intervals, from her left-sided Jacksonian convulsions. Shortly after admission she was given 1500 cc of saline solution subpectorally.

Nothing in regard to her life previous to admission was known.

The pertinent facts in her physical examination follow:

Pupils were contracted and did not react to light and distance.

Fundi showed a mild degree of papill edema.

Heart: Rhythm regular. Rate 120. Blood pressure 120 systolic. 88 diastolic. There was a harsh systolic murmur at the apex and at the base of the heart but apparently there was no enlargement of the heart.

Lungs and abdomen were negative.

There was incontinence of urine.

The left arm and the left leg were spastic. Jacksonian convulsions recurred at short intervals and involved the entire left side of the body.

Reflexes	Right	Left
Biceps jerk .....	+	++
Tricep jerk .....	+	+
Knee jerk .....	0	very slight
Achilles jerk .....	very slight	very slight
Patellar clonus .....	0	0
Ankle clonus .....	0	0
Babinski .....	+	0
Chaddock .....	0	0
Oppenheim .....	0	0
Kernig .....	+	+

Neck rigidity was absent.

Brudzinski's contralateral reflex was present, i.e., flexion of the leg on one side produced flexion of the leg on the other side and vice versa.

Laboratory Findings

*Blood Chemistry* (June 9): urea nitrogen 21 mg., creatinin 1.5 mg., sugar 103 mg.

*Urine* (June 10): slightest possible trace albumen; no sugar; negative sediment.

*Blood Wassermann* and Hinton tests negative.

*Spinal Fluid* (June 9): Wassermann negative; total protein 69 mg.; globulin least possible trace; sugar 85 mg.; lymphocytes 8 and red blood cells 644. Initial pressure 210 mm. water increased to 215 on left jugular compression and to 350 on right jugular compression. After removal of 10 cc clear fluid, the final pressure was 80 mm. water.

*Spinal Fluid* (June 11): Total protein 80 mg.; globulin least possible trace; sugar 76 mg.; lymphocytes 5 and red blood cells 14; colloidal gold 2333443220. Initial pressure 55 mm. water increased to 120 on left jugular compression and to 85 on right jugular compression. The dynamics were sluggish. After removal of 4 cc very slightly yellow fluid, the final pressure was 30 mm. water.

During her first two and one-half days at the R. I. H. her rectal temperature ran between 99° F. and 103° F.; her pulse between 100 and 120; and her respirations between 18 and 20. During her last two and one-half days at the R. I. H., temperature, pulse and respiration all rose gradually and in a parallel fashion till she died in a cyanotic and stertorous condition. Terminal temperature, pulse and respirations were respectively 106.5° F., 160 and 60.

In differential diagnosis a right-sided cerebral hemorrhage near the cortex and a right-sided brain tumor in the same location were considered. As cerebral hemorrhage was felt to be the best diagnosis and as brain tumor was not considered very seriously, an X-ray picture of the skull was not taken.

Surgery to relieve intracranial pressure or to evacuate or remove an encysted superficial area of cerebral hemorrhage was discussed, but, in view of the patient's age and future outlook if she survived an operation, nothing was done.

## COMMENTS

DR. HUGHES: As far as the information available on admission is concerned, the unconsciousness and Jacksonian convulsions tend to place the difficulty in the head, and with the lesion placed in the head we considered as possible the following conditions: vascular, inflammatory, neoplastic, and toxic-degenerative.

Examination: ("Pupils were contracted and did not react to light and distance.") Pupils which are contracted and do not react to light and distance, unless they are related to syphilis, usually are related to the pons, and show a circulatory difficulty there which is caused by local or generalized increased pressure within the brain. Such a condition often indicates a poor prognosis.

("Fundi showed a mild degree of papilledema.") This suggests also general increased intracranial pressure, and that the circulatory difficulty in the pons is due to the brain stem being pushed down into the foramen magnum. When the brain stem is forced into the foramen magnum, the tonsils of the cerebellum are pushed down there too and we would expect to find a pressure cone in that area.

Heart: If we considered the possibility of the lesion being a cerebral hemorrhage, the fact that there was no enlargement of the heart such as would go with hypertension would tend to rule out hypertension as the cause of the hemorrhage, even if we did not have recorded a normal blood pressure.

Incontinence of urine might occur with any profound unconsciousness.

Spasticity and Jacksonian convulsions on the left tend to indicate that the right cortex was involved.

Reflexes, etc.: As far as the neurological examination goes, the signs tend to show lesion on the right side of the brain. The knee jerk was a little more active on the left. The Babinski reaction being on the side opposite the presumed lesion could be explained as due to pressure transmitted across to the opposite side of the brain. The positive Kernig sign indicates some sort of meningeal involvement. The fact that neck rigidity was absent would tend to rule out meningitis and subarachnoid hemorrhage which would be extensive enough to produce the unconsciousness found in this patient. Flexion of the leg on one side produced flexion of the leg on the other side, and this Brudzinski's

contralateral reflex could be present in any one of the four conditions mentioned previously.

Laboratory Findings: The blood chemistry and urine findings would tend to rule out a toxic kidney condition.

Spinal Fluid: Sugar 85 mg.; lymphocytes 8 and red blood cells 644. These findings might be accounted for by blood which got into the spinal fluid at the time of spinal puncture or which got into the spinal fluid from some lesion of the brain. Initial pressure of 210 is slightly high. The last spinal fluid is different from the first spinal fluid. The decreased rise on right jugular compression would tend to indicate the possibility that there had occurred a block somewhere, presumably on the right side of the brain. The increase in total protein from 69 mg. to 80 mg. tends to show that the process in the brain is increasing. The type of death in this case is an intracranial one with rising temperature, pulse, and respiration—all rising in parallel fashion. This is due to interference with the circulation of the pons.

We would expect to find our diagnosis among one of the four conditions which were mentioned in the beginning, vascular, inflammatory, neoplastic, and toxic-degenerative. We will start with inflammatory first. As far as brain abscess is concerned, there is no focus and very few brain abscesses occur without a focus being present. Syphilis would be ruled out by negative Hinton and Wassermann tests on the blood and a negative Wassermann test on the spinal fluid. Meningitis—staphylococcic, streptococcic, pneumococcic, tuberculous, or meningococcic—does not appear likely, for in the spinal fluid the cells are normal; the protein is not increased as much as you would expect, and the sugar is not decreased. In tuberculous meningitis you usually have a larger number of cells. Kernig and Babinski signs could go with tuberculous meningitis, but you would expect more eye signs than we had in this patient. Next, we will rule out toxic-degenerative conditions. As far as we could tell from one urinary examination and from a normal blood chemistry, the kidneys were normal. We have, as far as examination is concerned, no reason for considering a toxic or a degenerative state. Having inflammatory and toxic-degenerative conditions ruled out, we have the possibility of vascular and neoplastic<sup>o</sup> conditions to consider.

Practically all the findings are consistent with either vascular or neoplastic conditions. Jacksonian seizures tend to occur in both of these conditions, but are more common in tumor cases. The spinal fluid dynamics, the increasing total protein, and the colloidal gold reaction might go with either condition. The type of death with temperature, pulse, and respiration all rising in parallel fashion before death could go with either one of these two conditions. The Kernig and Babinski signs could go with either, provided the vascular lesion or the tumor were situated near the meninges. The fact that the heart was not enlarged would tend to go against the diagnosis of vascular lesion caused by previous hypertension.

A right cerebral hemorrhage near the cortex was felt to be the best diagnosis.

If an intracerebral hemorrhage had occurred, it might have become encysted so that the fluid could have been aspirated or the entire encysted area might have been removed. Surgery was discussed, but the patient was not considered a satisfactory surgical risk, and it was felt that, if a patient of sixty years with such a lesion survived an intracranial operation, her chances of adjusting to life mentally or physically in anything like a normal fashion were very slim. For a vascular lesion surgery was not considered indicated, and without a more adequate history than was obtainable it was not felt justifiable to explore for neoplasm.

DR. KINGMAN: "This case is one in which I felt the neurological men were working under a handicap. She came in without any history at all. In most cases the history seems to be of extreme importance. Had anything happened to the woman? Had she had fits? We know nothing about it at all and it seems to me that Dr. Hughes has worked it down pretty well. We don't know whether this is acute or chronic. The chance is that something acute had happened. Now we have the spinal fluid, and the neurological signs and the eye signs. It seems to me they all point to a lesion involving the right cortex which seems to me to be above the right internal capsule—hemorrhage and new growth. A hemorrhage can occur spontaneously in young people. You may have a small aneurysm or some condition of that sort that has given hemorrhage. It might be traumatic. We know we can get trauma without any evidence of fractured skull. The little blood in the spinal fluid is due to the needle and looks as if some acute thing had happened. If she had a new growth, she had hemor-

rhage into the growth. I must confess that I have to admire the bravery of the neurological men to do lumbar punctures in these cases. I have seen patients die from having a lumbar puncture—they have died from pressure. Fortunately, in this case it did not go on to death.

Now as to the possibility of surgical interference in a case like that. Suppose it is acute—I rather feel in a case of that sort it better be explored. From her eye signs she has increased intercranial pressure and that has to be relieved. If you don't do anything in a case like that they are going to die. In a case twenty years ago where a patient had an infarct of the brain in about the mid lower region, I couldn't do anything except to relieve his pressure. I operated and since that time I have followed him and he is still going strong. I should say that it lay between vascular lesion or hemorrhage and that compression at least was indicated and could have been relieved provided the patient was in a state to stand operation."

#### *Demonstration or Postmortem Material*

DR. CLARKE: "I will take a minute to show the specimen. We have the brain here. The dura was firmly adherent over this area and, as you see, it was adherent not to the brain but to a tumor which lies in the brain. This is very sharply delimited and when we examine it carefully it is not in the brain. This tumor, in other words, was growing from the dura and pushing the brain downwards. There was a little necrosis and hemorrhage. It is a typical gross example of so-called meningioma or dural endothelioma or a dural-fibroblastoma."

Q.: "Could that have been applied by surgery?"

A.: "It could have been removed very easily."

Q.: "Would the skull show anything by X-ray?"

A.: "We couldn't get anything in this particular case."

Q.: "Did it show any hemorrhage?"

A.: "A very little hemorrhage."

Q.: "What degree of malignancy is it?"

A.: "These tumors are benign in the sense that they are encapsulated, they do not infiltrate and they do not metastasize."

---

## SOCIETIES

### PROVIDENCE MEDICAL ASSOCIATION

The regular monthly meeting of the Providence Medical Association was called to order by the President, Dr. Charles F. Gornly, Monday eve-



ning, October 1, 1934, at 9:45 o'clock. The records of the last meeting were read and approved. Invitations to the meetings of the Military Surgeons of the United States and the Inter-State Postgraduate Medical Association were read, also a letter concerning publicity material from the Community Fund.

The report of the Golf Committee was read by Dr. Bolotow.

The Standing Committee having approved their applications, the following were elected to membership: Francis E. Allin, William P. D'Ugo, Jesse P. Eddy, 3rd, Thomas A. Egan, Robert L. Farrell, Hugh J. Hall, Raymond F. McAteer, Mihran Misirlian, Rudolph W. Pearson, Amy E. Russell, George L. Young.

The president drew attention to the meeting next Monday, October 8th, to discuss medical economics, etc.

Drs. William L. Leet and Russell S. Bray presented a report on "Giardiasis" read by Dr. Leet. This is a syndrome apparently caused by a tadpole-shaped protozoan duodenal parasite with epigastric pain, anorexia, belching and vomiting. The organism is probably directly transmitted without an intermediate host. There are many treatments, as emetine, duodenal lavage, etc. Slides were shown demonstrating the organisms.

A symposium on "Backache" was opened by Dr. W. Jason Mixter, Neuro-Surgeon at the Massachusetts General Hospital, who gave a paper on "Rupture of Intervertebral Disk as a Clinical Entity." The basis for this paper was a small group of cases studied in the last year and a half. With a history of injury in about fifty percent, there is evidence of injury of the disk and extrusion of the soft nucleus pulposus. Careful X-ray examinations show narrowing of the disk and irregular protrusion and lipiodol injections may show a notch. A striking sign is diminution of one ankle jerk and the total protein is elevated in the spinal fluid. Laminectomy and careful search may show a small, irregular piece of cartilaginous tissue pressing against a nerve and a sinus into the disk. The operation is difficult and of course justified only in a very few carefully worked up cases. The symposium was continued by Drs. Henry McCusker, Roland Hammond, Murray S. Danforth, Harvey B. Sanborn and William A. Horan, who discussed the different types, causes and treatments of backache.

The meeting adjourned at 10:55 P. M.  
Attendance 140.

Collation was served.

Respectfully submitted,

PETER PINEO CHASE,  
*Secretary.*

---

## ANNOUNCEMENT

The Radiological Society of North America will hold its next Annual Meeting at the Hotel Peabody, Memphis, Tennessee, December 3-7, 1934. The medical profession is cordially invited to attend. Further information may be obtained by addressing the Secretary-Treasurer, Dr. Donald S. Childs, 607 Medical Arts Building, Syracuse, New York.

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## BOOK REVIEW

I KNOW JUST THE THING FOR THAT, by Dr. J. F. Montague. Published by The John Day Company, New York, 1934.

This book conveys some information of value to patients with gastro-intestinal complaints, but it contains much repetition. It wisely advises against the use of Seidlitz powders in gastric and cardiac disturbances. It stresses the value of psyllium seeds in certain cases of constipation and urges the use of much water without stressing the fact that there are many people who cannot take large quantities of water without harm. It suggests that the use of sodium bicarbonate in cooking vegetables is not advisable even though it will tend to keep vegetables green, as it destroys certain vitamins. On the whole it tends to advise the use of little meat, though most recent medical writings tend to stress the use of more meat because of its value in anemias and because of the value of certain of its derivatives in the muscular dystrophies. Dr. Montague apparently fears low blood pressure more than most physicians. He suggests that the heaviest meal might best be taken at night. There is some evidence, however, that better sleep is obtained and that less sleep is needed if a smaller meal is taken at night. A light meal at noon is of value chiefly to those who wish to be very alert mentally in the afternoon. This book will appeal more to the layman than to the doctor.

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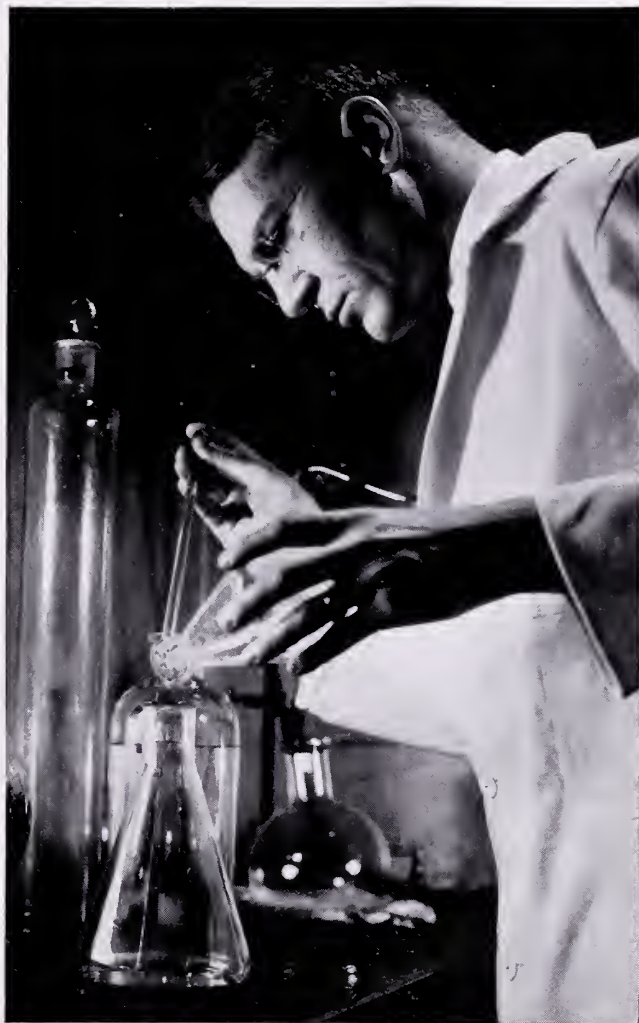
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## ORIGINAL ARTICLES

### METHYLENE BLUE IN CYANIDE AND CARBON MONOXIDE POISONING— A SURVEY OF THE LITERATURE\*

By HARRY B. LUKE, M.D.

In July, 1932, three men were taken to the Park Emergency Hospital in San Francisco. Fifteen minutes previously they had collapsed after drinking a beverage later found to contain large amounts of cyanide, in the office of one of the three. The condition on admission was recognized as probably cyanide poisoning and treatment was started at once, but all three of the men died, despite gastric lavage, artificial respiration and the administration of cardiac and respiratory stimulants. This experience led J. C. Geiger,<sup>1</sup> the U. S. Public Health Surgeon who was director of the hospital, to reflect on the inadequacies of the treatment of cyanide poisoning. As a result he went to pharmacologists Hanzlik of Stanford University and C. D. Leake of the University of California and asked if they could suggest an antidote for cyanide poisoning.

At that time Hanzlik<sup>2</sup> was demonstrating in his pharmacology lectures how methylene blue stimulated the respiration of laboratory animals when it had been diminished by the administration of cyanide. So he suggested to Geiger that methylene blue might be tried as an antidote for cyanide poisoning in human beings. In fact some of his students had asked if it could not be used. These experiments with methylene blue were the outgrowth of earlier observations.

In 1926 Sahlin<sup>3</sup> had demonstrated that methylene blue stimulated respiration when it was depressed by sodium cyanide, and enabled an animal to survive an otherwise fatal dose of cyanide. In 1930 Eddy<sup>4</sup> of the University of Michigan supported this observation, and in 1931<sup>5</sup> showed that the effects of a fatal intravenous dose of cyanide were reduced, and the animal survived, if 10 mgm. of

methylene blue per kilo of body weight were given intravenously 10 minutes before the cyanide was given or not over 2 minutes after the poison was given. M. M. Brooks<sup>6,7</sup> reported similar results.

The mechanism by which cyanide kills had been demonstrated by O. W. Warburg<sup>8</sup> in 1928. It inhibits the oxidizing ferment of the tissues throughout the body, thereby abolishing its ability to use oxygen.

Knowing that cyanide killed by destroying the oxidizing ferments, and having experimentally observed that methylene blue protected animals from fatal doses of cyanide, the conclusion of these earlier investigators was that methylene blue acted as an oxidative ferment in place of the one destroyed by the cyanide. In other words, they felt that methylene blue acted as a respiratory enzyme or stimulant in place of the one destroyed by the cyanide.

So when Geiger, of the Public Health Service, asked Hanzlik and Leake for an antidote for cyanide poisoning, they replied that there was experimental evidence that methylene blue was that antidote and recommended the intravenous administration of 50 cc. of 1% autoclaved solution of methylene blue.

Geiger then equipped himself with his remedy and waited patiently for a chance to use it. In September 1932 another man entered the Park Emergency Hospital. He had swallowed a dose of cyanide, instantly regretted his rash act and told his friends. He was promptly taken to the hospital where he was comatose on admission. His respiration was slow and regular; his pupils were contracted and sluggish; his lips were a bright vermilion color and his breath had a peculiar odor, suggesting paraldehyde or chloral. He had spasm of his voluntary muscles with moderate opisthotonos and extreme hyperextension of his hands and feet. He was given a gastric lavage with soda bicarbonate solution at once. Within 5 minutes of his entry he was given intravenously 50 cc. of 1% solution of methylene blue which Geiger had waiting for him. Five minutes later the man became conscious, followed by a chill and a complete clinical recovery within 15 minutes. This patient had taken 1 gm. of potassium cyanide, 0.05 gm. was recovered from

\*Presented at the Internes Conference May 10, 1934, at the Charles V. Chapin Hospital, Providence, R. I.

the stomach washings, and the rest, about 0.95 gm., was probably absorbed.

Since then Geiger<sup>9</sup> has reported two more cases of cyanide poisoning treated with methylene blue. The first of these took two #0 capsules of potassium cyanide. 0.05 gm. was recovered from stomach washings and 1.1 gm. absorbed. This patient received 50 cc. of methylene blue followed by momentary recovery and then a return to unconsciousness. So a second 50 cc. of methylene blue was given a half hour after the first dose and followed by recovery.

The second patient took 6.5 gm. of potassium cyanide by mouth and was given two 50 cc. doses of methylene blue one-half hour apart. Both of these patients recovered without other treatment. Furthermore, no untoward symptoms from the administration of 100 cc. of 1% methylene blue (1 gm.) were observed.

No other reports of cases treated with methylene blue have been made to date.

Geiger now had three cases of cyanide poisoning successfully treated with methylene blue. Clearly the drug had successfully stimulated the respiration in cyanide poisoning; why not try it in carbon monoxide poisoning which also caused a respiratory death? Accordingly Geiger<sup>10</sup> treated a couple of cases of carbon monoxide poisoning with intravenous methylene blue. The first one had been unconscious for half an hour and had been given artificial respiration with oxygen and carbon dioxide administration with improvement in respiration and cyanosis, but had not yet returned to consciousness. He was given 50 cc. of 1% methylene blue with little change in his condition. The carbon dioxide and oxygen administration was continued. After another hour the dose of methylene blue was repeated and the patient roused sufficiently to talk coherently for a moment, then relapsed into unconsciousness. In a half an hour 20 cc. more of the dye was given with renewed response and eventual recovery. The second case was given the 50 cc. of the dye soon after he became unconscious. In two minutes he was talking coherently. Geiger concluded his report by stating that the dye, in carbon monoxide poisoning, as in cyanide poisoning, acted on the oxidation-reduction processes of the bodily tissues and resulted in a stimulation of the respiratory and circulatory centers.

At this time M. M. Brooks<sup>11</sup> supplied animal experiments which showed that methylene blue was

an antidote for carbon monoxide poisoning. Rabbits were allowed to breathe carbon monoxide until respiration ceased. Artificial respiration was then given to all of them, and half received intravenous methylene blue. 90% of the rabbits receiving the dye recovered while only 20% of the controls did so.

Several other clinicians<sup>12 13 14</sup> then reported a case or two apiece of carbon monoxide poisoning treated with methylene blue, in addition to oxygen and carbon dioxide administration.

It now appeared as if we had been given a valuable and almost specific method of treating cyanide and carbon monoxide poisoning. But these earlier reports were next to be investigated by other men.

The mechanism by which cyanide causes death was demonstrated by Warburg.<sup>8</sup> To repeat, it inactivates the oxidizing ferments of the tissues, thereby abolishing the ability of the body tissues to use oxygen.

How does methylene blue protect the organism from cyanide poisoning? Does it replace the enzyme destroyed by the cyanide, and of itself act as an oxidizing ferment to the tissues, as Hanzlick, Geiger and other earlier investigators supposed, or does it act by some other mechanism?

Methylene blue had long been known to convert hemoglobin into methemoglobin. Compemalle<sup>15</sup> had proved that this took place in vivo as early as 1891. Wendel,<sup>15</sup> Wendel and Schaffer,<sup>17</sup> and Warburg, Kubowitz and Christian<sup>18</sup> showed that this also occurred in vitro. The latter group of men also showed that methemoglobin reacted with hydrocyanic acid to form an unusually stable compound, cyanmethemoglobin. So stable is this compound that the cyanide radicle could not be removed in the presence of a vacuum. They showed in vitro that methemoglobin was an effective reagent for absorbing hydrocyanic acid from exceedingly dilute solution or gases. Then they demonstrated that in vivo the injection of methylene blue and the formation of methemoglobin leads to the fixation of cyanide as cyanmethemoglobin within the blood cell. This occurred whether the cyanide entered the blood stream by absorption from the lungs, from the alimentary tract or from tissues where the cyanide has penetrated before the methylene blue was injected.

Methylene blue thus acts through a definite antidotal mechanism on cyanide. What of the supposition that it replaces the function of the tissue oxi-



dizing ferment destroyed by cyanide. The only experimental basis for this supposition is furnished by Warburg, quoted by Haggard and Greenberg,<sup>22</sup> who showed that methylene blue, applied to isolated tissue, counteracted the influence of cyanide or the tissue ferment. This was found to hold true only for isolated bloodless tissue, a condition not present in the poisoned animal. Hence there is no experimental basis for the assumption that methylene blue acts as an enzyme to tissue oxidation reactions. Recently Hanzlik and Richardson<sup>23</sup> again suggest that methylene blue seems to stimulate external respiration, and Haggard and Greenberg<sup>22</sup> observe that the animal's respirations are momentarily increased in depth and force after the injection of methylene blue. This is most likely a momentary reaction to the intravenous injection of the dye. In any event, it seems conclusively demonstrated that the chief antidotal action of the dye is produced through the production of methemoglobin and the formation of the very stable cyanmethemoglobin, fixing the cyanide within the red cell.

Since methylene blue acts by forming methemoglobin, Wendel<sup>19</sup> reasoned that the injection of methemoglobin alone should give protection against cyanide. Furthermore, any substance which formed methemoglobin more rapidly than methylene blue should be more effective than the dye. Amyl nitrite also forms methemoglobin when exposed to red cells. So Wendel took 20 cc. of blood per kilogram of body weight from dogs, converted the hemoglobin to methemoglobin with amyl nitrite (removing any excess of the latter) and reinjected the cells into the dogs. The dogs were then injected with a lethal dose of hydrocyanic acid (about 6 mg. per kilogram) and were found to be completely protected. Furthermore, a similar volume of methemoglobin cells, when injected into dogs approaching death from a lethal dose of hydrocyanic acid, rapidly revived the animals.

Hug,<sup>20</sup> the professor of Pharmacology of the Faculty of Medicine of Rosario, states that there are three groups of substances capable of acting on cyanides. These are:

1. Substances containing sulphur—such as sodium thiosulphate, sodium tetrathiocyanate, glutathionate and cystine.
2. Derivatives of sugars—such as dioxycetone and triose.
3. Methemoglobin producing substances such as sodium nitrite, amyl nitrite, methylene blue, tolui-

dine blue, pyrogallol, procatechin, phenylhydrazine, and potassium ferrocyanide.

In group one only sodium tetrathiocyanate was strong enough of itself to be of much use, and it was so toxic as to preclude its use. Sodium thiosulphate changes cyanide to non-toxic sulphocyanate, but its value is limited because it has to be given either before or at the same time the cyanide is given.

Of group two, triose—glycerinic aldehyde—was selected for experimentation. It unites with cyanide to form non-toxic cyanhydrine. Very large dosage was necessary and its use further limited by its toxicity which consisted of excitation of the higher nerve centers to produce restlessness, irregular respiration and convulsions.

In group three, the methemoglobin-producing substances, Hug found sodium nitrite to be most effective, that is, smaller doses proved adequate. Amyl nitrite and methylene blue were also effective, and will be considered later.

Both Hug and Wendel pointed out the limitation of the methemoglobin-producing substances. Their antidotal action depends upon the conversion of oxygen carrying hemoglobin into non-functional methemoglobin and then cyanmethemoglobin. Hence their value depends upon the maximal quantity of hemoglobin changeable to methemoglobin without killing the animal from the anoxemia. 40 mg. of sodium nitrite per kilogram is the largest dose that can be given to dogs without killing them. This amount of sodium nitrite will protect a dog from about 4 lethal doses, and it changes about 60% of the total hemoglobin to methemoglobin. This is the top limit of hemoglobin which can be spared without leading to death from insufficient oxygen transport. These same figures hold approximately for men. Furthermore, sodium nitrite is about twice as efficient as methylene blue, and amyl nitrite about one-third more effective than methylene blue.

Analyzing Geiger's first case, which absorbed practically 1 gm. of cyanide, enough methylene blue had to be given to inactivate 1.6 litres of blood, or about one-fourth of the total blood and hemoglobin. This loss of oxygen carrying capacity is not serious. The absorption of 3 gms. of cyanide would require methemoglobin formed from about three-fourths of the total blood volume, or more than 60% of the total, which is the upper limit. Hence, in an average adult, the absorption of much more than 2 gm. of

cyanide will be fatal anyhow, if not from the poison itself, then from the treatment.

Methylene blue is probably not quite so toxic as this reasoning could lead us to suppose. Hanzlik and Richardson,<sup>23</sup> in a recent paper, point out that methylene blue is excreted in the urine in a partially oxidized state, thus restoring the hemoglobin of the blood to its oxygen carrying capacity. When 10 mg. per kilogram of body weight of methylene blue were injected (a dose roughly corresponding to 50 cc. of a 1% solution for an adult) the oxygen carrying capacity of the blood was reduced 11.9% in 10 minutes. After 1 hour, the oxygen carrying capacity was 6.1%, or over half of the dye had been eliminated. Thus, if we give a maximal dose of methylene blue without relief of symptoms, we may repeat at least part of it after one-half to one hour. Moreover, Hanzlik and Richardson remind us that cyanide poisoning is not usually so rapidly fatal as we are wont to suppose, but that a state of coma with convulsions, untreated, may last for two or three hours. This makes it possible for us to give perhaps twice as much methylene blue as if we had to give it all at once.

Hug recommends the slow injection of a 2% solution of sodium nitrite, not to exceed 50 cc. (1 gm. of the drug) for an adult. If further protection is needed he advises the use of the 10 cc. of 3% sodium thiosulphate intravenously in addition to the sodium nitrite, the sodium thiosulphate being of some value by changing the cyanide to an insoluble sulphocyanate, and not forming further methemoglobin. It also seems to act as a synergist and increase the action of the sodium nitrite.

If amyl nitrite is used, by inhalation instead of sodium nitrite intravenously, Chen, Rose, and Clowes<sup>21</sup> recommend inhaling a 0.3 cc. pearl every 15-30 minutes until the patient has recovered. If breathing ceases artificial respiration should be instituted and the amyl nitrite continued. The pulse and respiration should be watched for 24 hours.

Hanzlik and Richardson<sup>23</sup> point out that the nitrites, especially sodium nitrite, are extremely dangerous to use, because of the possibility of the well-known nitrite reaction, leading to circulatory collapse. When we notice that from 0.7 gm. to 1.4 gm. of sodium nitrite must be given intravenously, we realize the danger of inducing circulatory collapse, even with small divided doses. Hence, methylene blue seems to be the safest of the methemoglobin forming antidotes, although less

efficient as an antidote than the more toxic sodium nitrite.

Hanzlik and Richardson recommend the intravenous injection of 50 cc. of 1% methylene blue which may be repeated up to a total of 200 cc. to 300 cc. for an adult. A 1% aqueous solution of methylene blue may be used, or preferably a 1% solution in 1.8% (isotonic) sodium sulphate, which makes a very stable solution. Gastric lavage should be performed promptly with 5% sodium thiosulphate. Artificial respiration, administration of oxygen-carbon dioxide mixtures and circulatory stimulants such as caffeine and adrenalin should be used as indicated symptomatically.

It is now apparently firmly established that the methemoglobin-producing substances are excellent but limited antidotes for cyanide poisoning. They act by producing a substance, methemoglobin, which forms insoluble, non-toxic compound, cyanmethemoglobin, from the cyanide, and not by replacing the oxidizing ferments of the tissues. Methylene blue appears to be the most satisfactory of these methemoglobin-producing substances.

What is the value of methylene blue in carbon monoxide poisoning? To recollect, Geiger and several others have reported favorable results with methylene blue in cases which received also the customary oxygen, carbon dioxide and artificial respiration when necessary. How does carbon monoxide cause death? Cyanide, as Warburg pointed out, kills by inactivating the oxidizing ferment of the tissues. Warburg also showed that carbon monoxide combines with these tissue ferments, inhibiting their activity as does cyanide. In bloodless tissues, a concentration of 95% carbon monoxide (and 5% oxygen) is necessary to even partially inhibit the respiratory ferment of the tissues. A mixture of .1% carbon monoxide (and 21% oxygen) is fatal to man. In other words, the affinity of the hemoglobin of the blood for carbon monoxide is several thousand times greater than the affinity of the tissue ferments for carbon monoxide, and long before the tissue ferments have received enough carbon monoxide to inactivate them the hemoglobin is completely saturated with carbon monoxide. Thus, death in carbon monoxide poisoning is due to asphyxia from the replacement of oxygen carrying hemoglobin with carbon monoxide hemoglobin.

Now, Haggard and Greenburg<sup>22</sup> remind us that methylene blue is successful in cyanide poisoning



because it produces methemoglobin, and not by stimulating tissue respiration of itself. When given for carbon monoxide poisoning it also produces methemoglobin. Methemoglobin does not carry oxygen, in fact, when sufficient methemoglobin has been produced (from two-thirds of the total hemoglobin), the patient dies from asphyxia. To give methylene blue to a patient with carbon monoxide poisoning is to decrease further the hemoglobin for oxygen transport already limited by carbon monoxide, and therefore to increase the anoxemia. Theoretically, at least, methylene blue is synergistic with carbon monoxide and definitely contraindicated in carbon monoxide poisoning.

Haggard and Greenburg show that the carbon monoxide content of the blood falls 20-30% in 15 minutes after a person is removed from the poisonous atmosphere. In all the cases reported as successfully treated with methylene blue, at least one-half hour to an hour and a half had elapsed before the dye was given. Hence these patients had excreted enough carbon monoxide so that the administration of methylene blue was not fatal, but it could not have been beneficial. The counter shock caused by the pricking with the intravenous needle would probably have been sufficient to waken them.

M. M. Brooks,<sup>11</sup> who cited experiments to show the value of methylene blue in carbon monoxide poisoning, did not inject the controls with even saline solution. Haggard and Greenburg repeated her experiments, using both rats and dogs. Groups of both animals were gassed to almost cessation of respiration, then half were given intravenous methylene blue (10 mg. per kilogram) and half saline. The results indicated that the saline controls were able to walk when they still had 48% carbon monoxide in their blood and only 52% free hemoglobin for oxygen carrying. The dogs with methylene blue did not walk until their blood carbon monoxide was down to 28% (as compared with 48% of the controls), and their free hemoglobin was 63% (as compared with 52% of the controls). They had in addition 9% methemoglobin from the methylene blue. The most striking results, however, were not apparent until the second day, when the animals who had received methylene blue appeared ill, lethargic and had shaking legs upon standing, while controls were normally active.

Haggard and Greenburg thus strikingly prove both theoretically and experimentally that methylene blue is of no value, and is even harmful in cases

of carbon monoxide poisoning. It is interesting to observe that since their discussion, published last June, no one has reported a case of carbon monoxide poisoning, treated with methylene blue, nor has anyone tried to demonstrate its value experimentally.

By way of summary we might make the following conclusions:

1. Cyanide causes death by inactivating the oxidative ferments of the tissues. Methylene blue forms methemoglobin with the hemoglobin of the blood. This forms an insoluble, inactive compound with cyanide, cyanmethemoglobin, and is an effective antidote for up to 3 gm. of the poison in an adult. The various techniques of treatment, in order of preference, are as follows:

(a) Intravenous injection of 50 cc. of 1% methylene blue which may be repeated up to a total of 200 cc. for an adult (300 cc. over a period of one or two hours).

Prompt gastric lavage with 5% sodium thiosulphate.

Administration of artificial respiration, oxygen-carbon dioxide mixtures, and circulatory stimulants such as caffeine and adrenalin, as indicated symptomatically.

(b) Intravenous sodium nitrite, 50 cc. of a 2% solution (1 gm.), given preferably in 5 doses of 10 cc. each during 1 hour and with adrenalin ready to combat circulatory collapse.

Intravenous sodium thiosulphate, 10 cc. of a 3% solution as a synergist to the sodium nitrite.

Use of gastric lavage, respiratory and circulatory stimulants as above in (a).

(c) Inhalation of amyl nitrite pearls (.3 cc. each) every 15-30 minutes until recovery.

Use of gastric lavage, respiratory and circulatory stimulants as in (a).

2. Methylene blue and its allied drugs have no use, either theoretically or experimentally, as antidotes for carbon monoxide poisoning. They are, in fact, definitely contraindicated. Our treatment of carbon monoxide poisoning is still the use of oxygen and carbon dioxide, artificial respiration when necessary, and the use of cardiac and respiratory stimulants.

A pertinent question that no one has considered is "after the cyanide has been detoxified by the methemoglobin, what becomes of the cyanmethemoglobin which has been formed?"



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## PERNICIOUS VOMITING OF PREGNANCY

By DR. FRANK S. HALE

253 ELMWOOD AVENUE, PROVIDENCE, R. I.

There are few medical problems that have produced such a variety of opinions or such an array of weird remedies as hypermesis gravidarum. It has been labeled as an obsession, a non-entity, and more charitably, as a simple neurosis. Its essential cause still is unknown. Many "miracle men," as DeLee calls them, have proposed methods of treatment or medication, the general use of which has always been disappointing. With our present understanding, or more exactly, our actual lack of knowledge of the essential cause, supportive treatment, combined by a most thorough ruling out of the presence of any other contingent disease, seems to be the most satisfactory treatment for pernicious vomiting.

That a woman be pregnant, does not give her immunity to incurrent diseases that in themselves may produce severe vomiting. Examples of such conditions are: gastric ulcer, gall bladder disturbance, abdominal cancer, tubercular peritonitis, brain tumor, and acute appendicitis. I shall not describe here the technique required to eliminate the possibility of these conditions, but occasionally, autopsy does show such pathology in a death which has been attributed to hypermesis gravidarum.

Negligence in treatment of the usual vomiting of pregnancy may so dehydrate the patient as to transfer her to the pernicious type. Experimentation should have no place in the severe cases, and even simple morning sickness is quite definitely helped by some degree of routine supportive care.

Whatever the essential cause may be, four factors stand out in varying degrees in these cases, namely:

1—Dehydration. 2—Starvation. 3—Disturbance of the hepatic balance. 4—Neurosis.

Hospitalization, of course, in all severe cases is to be recommended.

The neurosis is treated by rest, isolation, and sedatives. Bromides or small quantities of chloral by rectum are most commonly used. I am quite partial to Dial "Ciba" as this may be given hyperdermically.

The dehydration and much of the starvation may be cared for by intermittent saline glucose or dextrous 10-25%, 200-300 cc. once to three times a day, and in severe cases, continuous venaclysis is given 3,000 cc. daily of a 5-10% saline glucose or dextrous solution. Some cases showing slow improvement may require the addition of protein caloric support—especially if urobilinuria is persistently present. This, of course, indicates hepatic derangement. Such protein nourishment as white of egg, milk, etc., may be given through a duodenal tube. The indications of improvement are: (1) Increased urinary output in two or three days up to 1,000 cc. with a 1.010 specific gravity. (2) Cessation of vomiting should occur within 72 hours. Food should then be taken by mouth in small quantities at frequent intervals, the type diet seeming to be immaterial. (3) Retention, followed by a gradual gain in weight. I would say here that too early discharge from the hospital is a mistake, as relapses too often occur.

Unsatisfactory progress is noted by:

1. Persistently concentrated and meager urinary output.

2. Urobilinuria constantly in the urine.
3. Presence of jaundice probably denoting acute yellow atrophy of the liver.
4. Continual vomiting in spite of gastric rest.
5. Progressive loss of weight and weakness.

In the classic presentation of hyperemesis, which we have all read, given in 1852 by Paul Debois at the French Academy of Medicine, he divided, for easier description, the disease into three progressive stages. A patient should never be permitted to reach the final harrowing terminal stage of delirium, somnolence, stupor and coma. Interference then is futile. During all this disturbance, the foetus usually remains alive. Occasionally, however, it does die, vomiting then stops, and spontaneous abortion occurs.

Termination of pregnancy even with an intensive supportive treatment may be very rarely required. This is a most delicate point. Consultation then to verify diagnosis, share the responsibility, and to avoid any question of undue haste or illegality, is most desirable.

Intravenous saline glucose therapy has come into such everyday use that we tend to forget the extensive and continued study along this line by Hendon, Matas, and especially Paul Titus of Pittsburgh. It is through the courtesy of one of the latter's co-workers, Dr. Eiselman, together with my observations at the Elizabeth Magee and St. Margaret's clinics, and my service and private practice, that this subject matter is derived.

The remarkable improvement of a dehydrated patient after intravenous saline glucose, is quite comparable to a blood transfusion in hemorrhage cases, 200-300 cc. of a 25% solution given t.i.d., represents considerable actual sustenance — roughly, 6 oz. of glucose or dextrous. In the continuous veneclysis method, up to 3,000 cc. daily of a 10% solution does not embarrass the circulation, is not uncomfortable for the patient, and may be continued for a week or more. This treatment is equally efficacious in the post-operative treatment of gastric and intestinal cases. Special apparatus is necessary for veneclysis, and carefully prepared, pure solutions prevent reactions. A recent change in this therapy is the addition of calcium gluconate, which may be given intramuscularly. Clysis has so many advantages over rectal fluids that the rectum is used only for medication and cleansing enemas. Insulin is seldom needed to counteract the varying

amounts of glucose. Before leaving the subject of this phase of the treatment, I may add that it is our experience at St. Joseph's that Titus' method of estimating liver damage by the rapidity of glucose absorption (as shown by repeated blood sugars) is of excellent prognostic value. Obviously, then, saline glucose either used intermittently or as continuous venoclysis, is the most important factor in our present supportive treatment for all of the severer cases of the vomiting of pregnancy. Hospitalization is necessary for this type, and many cases will require special duty nursing.

No paper seems complete without some statistics. I quote here from the Maternal Death Report, United States Department of Labor—"Although pernicious vomiting of pregnancy was the primary cause of death given for only 61 of the 7,380 women included in the study, it was a contributing factor in 191 other cases. The duration of the vomiting before the physician was called was given in 164 of the 252 cases. It had lasted less than a week in 49 cases, from 1-2 weeks in 24 cases, from 2-4 weeks in 28 cases, and 4 weeks or longer in 63 cases." It goes on—"The condition that 227 of these 252 women were in when they were first seen by the physician was noted. Twenty-nine were said to have been in good condition, 62 in fair condition, 136 in poor condition." The following comment is given by the Advisory Committee: "The chief method of attack against the severe toxemias of pregnancy is conceded to be their early detection and control. For this it is necessary to have continuous intelligent medical supervision of the prospective mother from early in pregnancy. Evidently there is a great need for education of patients and families."

### *Conclusions*

1. The purpose of this paper is to stimulate an interest in early adequate treatment of the ordinary vomiting of pregnancy. It is neither a non-entity nor a simple neurosis. The patient is ill and needs and deserves rest and care.

2. Other conditions besides the pregnancy may be causing the vomiting. Such possibilities should be thoroughly investigated.

3. Briefly, to outline an intensive supportive treatment which in most cases will sustain the patient until she has overcome her toxicity.

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## EDITORIALS

### MEDICAL UNEMPLOYMENT RELIEF

The plan of the Rhode Island Medical Society for medical care of the unemployed and their families was published in the October number of this JOURNAL. This plan seems to us to be a good one. These people must be taken care of and there are too many of them to be cared for properly on a charity basis by private physicians. This is true especially as the greater number of them call on the physicians who practice chiefly among the poor and who cannot afford to spend the greater part of their

time on charity work. Some of these physicians are doing a large practice without being paid enough to live on.

This plan also conforms very closely to the ten principles to be followed in social experiments as recommended by the A.M.A. Although the medical profession does not absolutely control the administration of the plan, the committees of physicians have considerable influence and in those communities where the committee has been active the medical profession has been able to guide the administration.

A very few physicians are trying to make as much money as they can without reference to the



needs of their patients for treatment and it is the duty of the committee of the local medical society to prevent this. In Providence the committee inspects the bills. This would seem to be important in order that the ninety-nine physicians who are acting in good faith should not suffer in reputation on account of the one who visits his patients frequently in order to run up a large bill at the taxpayers' expense.

There are other problems which need different solutions in different localities, such as the question of prescriptions and how they shall be filled, and what care shall be given chronic invalids and those who need special treatments and appliances. All these questions must be decided by conferences between the committee of physicians and the Emergency Relief Administrator.

We believe that if the local medical societies through their committees will give sufficient attention to the details of this plan that it will be of great benefit to both the unemployed and the physician.

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#### GERIATRICS AND SURGERY

How many aged people are allowed to die when a surgical operation, performed by skilled hands, might prolong life and make them comfortable enough to enjoy it?

There are many women past 80 years of age who could and would undergo a gall bladder operation if the physician were optimistic. We are often inclined to be unduly pessimistic in dealing with patients of advanced years. The problems of senility are interesting.

Aged diabetics may successfully undergo operation in skilful hands and under ethylene anesthesia. We do not hesitate to operate on aged diabetics. There are many old women to whom life has become a nightmare because of cholecystitis or prolapsus uteri. Of course, it would be better to correct those abnormalities at the age of 50 or 60, but there is no reason why persons past 80 or 90 should not be given a chance to live a little longer and comfortably.

Take for instance the old man who suffers from cholelithiasis, the question of cancer or cirrhosis of the liver enters into the picture. The Takata-Ara reaction may rule out advanced cirrhosis, but only exploration will elicit the presence of carcinoma. It is advisable to give old people a chance and oper-

ate; to consider them doomed is a mistake, unless they happen to be abnormally weak.

Advanced years are not always a handicap on the operating table. They often stand operative shock far better than younger patients. It is amazing to see a man of 85 undergo an operation for peptic ulcer and rally. A most able surgeon and equally able anesthetist are necessities in such cases—a surgeon who is not only deft but quick and will work with a minimum of injury and manipulation of the tissues. Several years ago that famous surgeon, Robert T. Morris, advocated that in the fourth era of surgery we would operate with a minimum of manipulation of the tissues and with a very small incision. He was a good prophet.

Preparing the senile patient for operation is essential: intravenous saline the night before is often satisfactory, intravenous glucose on the morning after operation, and subcutaneous glucose and saline at night, this repeated every day until the intake and retention of fluids are satisfactory. This often gives excellent results. The senile patient should be out of bed soon after operation, if his condition warrants it. Some surgeons get their old patients out of bed on the third day and home on the seventh day following appendectomy. There is a tendency to keep old people in bed too long. This is a misconception of the factors involved; obviously less danger of embolism or pneumonia if the patient gets up soon after operation.

Give old patients the chance to rally and enjoy life as long as possible. The results of our efforts will often surprise us.

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#### PUBLIC HEALTH AND PRIVATE PRACTICE—THE DETROIT PLAN.

Studies of the costs of medical care have suggested that the socialization of medicine, though resisted by the profession in the hope that nothing may interfere with the ideal status of the family physician, nevertheless may be in the end the inevitable result of various disruptive economic forces now at work. The multiplication of health agencies with the introduction into various communities of clinics staffed by a salaried medical personnel without the advice or consent of the local medical profession is socialization of a thoroughly bad type and, as the JOURNAL has recently pointed out, open to great criticism. Under such circum-

stances the agencies of public health and private practice stand opposed—where understanding and co-operation are most needed—in as much as the prime object of both is the health of the citizens of the state.

In this connection a consideration of the "Detroit Plan" so ably presented by Dr. Henry F. Vaughn at the recent meeting of the Providence Medical Association is most appropriate. Professional participation in health work is the essence of the plan. It involves abolition of many of the free clinics with a return of the patient to the family physician for the work that the clinic previously had performed.

Described briefly the "Detroit Plan," sponsored by the Wayne County Medical Society, including the city of Detroit and three rural counties, consists of a training of the medical profession to carry out public health procedures, beginning with diphtheria immunization, abolition of free clinics for this work, an educational campaign by public health nurses, the sending of the patients to offices of the private practitioners who have agreed to hold a definite office hour for this work and a fixed minimum fee for the procedure with compensation from public funds where the patient is unable to pay. The whole plan has been developed and is administered by the local medical society and the board of health jointly.

Such a plan of co-operation has many obvious advantages not the least of which is the definite return of the patient to the office of the family doctor where he belongs. It not only eliminates the interference with private practice of which the free clinic has at times been guilty, but it increases public respect for the family doctor as an exponent of preventive as well as curative medicine and constitutes him officially a deputy health officer and an integral part of the public health organization. Financially, the doctor does not lose. In the actual application of this plan in Detroit in the matter of diphtheria prevention, it is estimated that five times as much money has been paid to the doctors of the city as they could have collected for the care of the illness which would normally have occurred had the program not been in force.

It must be admitted that the cost of operating the plan is somewhat greater than that of mass immunization by paid workers in free clinics. It is the general opinion, however, that the greater amount of actual protection of the public which is achieved, the improvement in the training and in

the status of the family physician in his relation to the public and to the public health authorities repays the extra cost many times over.

In this matter the first move is up to the local medical societies. In Charleston, W. Virginia, St. Louis, Mo., Albany, N. Y., and elsewhere modifications of the plan are being attempted and early reports indicate success. The JOURNAL respectfully suggests that here also, preferably in Providence where leadership in matters of public health can be taken for granted and the District Nursing organization is second to none, the matter be seriously considered. A study of the situation by a committee including representatives of the Department of Public Health will result in a report which will prove of the greatest personal interest to every practicing physician in Rhode Island.

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### THE NURSING INSTITUTE

The fifth annual Nursing Institute under the joint auspices of the R. I. League of Nursing Education, the R. I. State Nurses' Association and the R. I. State Organization for Public Health Nursing was held at the Biltmore Hotel, November 7 and 8 with a total registration of over seven hundred.

At the first session Wednesday afternoon, sectional meetings were held. Miss Ella Best, R.N., acting Associate Director of the American Nurses' Association Headquarters, spoke at the Private Duty Section on the recent survey of the nursing situation in Rhode Island. In her talk she spoke favorably of the eight-hour day now being instituted in the hospitals of neighboring states.

At the Institutional Section, Miss Helen Wood, Director of the School of Nursing at Simmons College, spoke on the correlation of classroom teaching with ward practice. Miss Harriet Frost, Director of Public Health Nursing at the New York Hospital, spoke to the Public Health Nurses on the need of adequate health teaching along with the home nursing care.

At the dinner meeting, Miss Jane Louise Mesick, Dean of Simmons College, gave suggestions how professional people may use their leisure time for greater stimulation and enjoyment.

At the evening session with Miss Mary Sewall Gardner presiding, Miss Sophie C. Nelson, recently president of the National Organization for Public

Health Nursing, spoke on "Every Nurse a Health Teacher." She emphasized the fact that the public is interested only in the results we obtain and not in our problems. In her talk she referred several times to the many contributions made by Dr. Charles V. Chapin to the field of Public Health.

At the Thursday afternoon session, an excellent symposium on Diseases of the Thyroid was presented by a group of the doctors representing the Homeopathic Hospital. Dr. Frank E. McEvoy gave the general talk and was followed by Dr. James H. Fagan, who presented some typical cases, and Dr. Russell Hunt, who discussed the X-ray interpretations. The nursing care was discussed by Miss Martha Peckham and Miss Edna Rydberg.

At the Thursday dinner meeting, Mr. Page Potter gave those present some useful advice on how to arrange and care for flowers, urging nurses to be "flower conscious."

The Thursday evening session, at which Dr. James Gordon Gilkey spoke on "The Secret of Getting a Lot Done," was well attended and of great interest to those present. He emphasized the point that everyone could accomplish more if they would use their time to good advantage and would overcome their personal conflicts.

An interesting side line of the Institute was the Hobby Show at which many of the nurses displayed work or interests carried on in their leisure time.

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## QUINIDIN SULPHATE THERAPY

By CLIFTON B. LEECH, M.D.  
211 ANGELL STREET, PROVIDENCE, R. I.

Quinidin sulphate is a drug which has a definite although somewhat limited field of usefulness, chiefly in the treatment of disorders of the mechanism of the heart beat. Its mode of action, toxic effects, contra-indications and therapeutic value have become sufficiently well elucidated during the past fifteen years to permit of a brief survey of the subject.

### *Physiologic Action*

The chief effect of the drug is to lengthen the refractory time of the heart muscle, especially in the auricle, which tends to abolish the circus movement responsible for many of the paroxysmal disorders of the heart beat. Speed of auricular conduction may also be slowed, in antagonism to the breaking up of the circus movement, but the former

is usually the predominating effect. A third action is that of depression of the vagi nerves, but this is usually not marked and seldom produces more than a temporary acceleration of the ventricular rate. Quinidin may also depress auriculo-ventricular conduction by a direct action upon the conduction tissues though this rarely plays an important part in the therapeutic action of the drug. The effects of quinidin are dependent upon the amount of the drug given within a short period rather than upon an accumulation within the body as a result of smaller amounts administered during a longer time.

### *Toxic Effects*

The toxic effects are chiefly those of ordinary cinchonism—headache, dizziness, deafness, tinnitus, nausea, vomiting, urticaria and diarrhoea. There may occur a very rapid, regular heart action at a rate higher than before administration of the drug; rarely, intraventricular block may develop. When frequent doses are given, observation of the patient should be made for toxic effects before each new dose, and therapy discontinued if such signs develop. Usually large doses are well tolerated. Occasionally idiosyncrasy is met with. In order to avoid harming an individual sensitive to the drug, it is customary to give by mouth a test dose of  $1\frac{1}{2}$  to 3 grains before beginning the therapy proper. A very rare toxic effect is that of cardiac standstill: such an event probably would be preceded by other warning signs of toxicity.

### *Contra-indications*

Aside from idiosyncrasy, the drug is contra-indicated in patients who have or have had auricular fibrillation with circulatory stasis as shown by hæmoptysis, venous engorgement or edema, or who present great cardiac enlargement. In such patients the favorable action of quinidin in restoring regular rhythm may bring about embolism by throwing into the circulation bits of intracardiac thrombus. Of course, any heart which contains a thrombus, as do many auricles in the case of persistent fibrillation of the auricles, is likely at any time to pump out an embolus. In this connection I was once told by Dr. E. P. Carter of the Johns Hopkins Hospital that in a series of patients with auricular fibrillation from whom he withheld quinidin there occurred six sudden deaths, presumably due to embolism. However, if we administer quinidin to such patients and they die suddenly we wonder what the drug had to do with it. It seems better to avoid any action which tends to increase the likelihood of embolism.



*Premature Beats*

While quinidin has been recommended for the treatment of premature beats and extrasystoles of both auricular and ventricular origin, in actual practice such therapy is not often successful. I have been so frequently disappointed in this respect that I now use quinidin for this purpose only when other measures have failed.

*Paroxysmal Auricular Tachycardia*

Paroxysms of auricular tachycardia, of sudden onset, usually terminate spontaneously within a few minutes to a few hours. Quinidin does not act rapidly enough to be of special use in the treatment of the acute attack unless it be greatly prolonged, in which case the drug may be of great service. For example: on April 1st, 1934, I saw, with Dr. Samuel Adelson of Newport, a man of forty-eight years who had had within a three-year period, three attacks of paroxysmal rapid heart action. One attack lasted two weeks, another two days, the third one and one-half days. At the time of my visit he had been in bed for thirteen days during which entire time his pulse rate had been 180. The onset had been sudden, following no particular exertion or other evident cause. The patient was conscious of the tachycardia, which was uncomfortable but painless, and felt very weak. He had been kept awake by the incessant feeling of palpitation. Physical examination revealed no definite evidence of cardiac enlargement. The tachycardia made it impossible to ascertain with certainty about the presence of cardiac murmurs, but none were heard. The heart sounds were moderately poor in quality. The rhythm was absolutely regular, rate 180. There were signs of circulatory congestion in the liver and lungs. The blood pressure levels were 150 systolic, 90 diastolic. Various types of vagal stimulation failed to effect the rate or rhythm of the heart. There was no change in the heart rate following change of posture from reclining to upright. The patient had had digitalis, and earlier in the attack had been given six three-grain capsules of quinidin sulphate at three-hour intervals. It seemed obvious that circulatory failure had begun and was likely to increase if the rapid rate continued much longer. It was decided to administer by mouth three grains of quinidin sulphate every hour until the heart rate changed or toxic signs appeared. After eighteen such doses the heart rate dropped to 140. Quinidin was then omitted. A few hours later the rate was 80. The

next day the rate was 50 and remained so for about ten days, when it gradually increased to its present level of 70 to 78.

While quinidin is not very often needed in the treatment of acute attacks of paroxysmal auricular tachycardia, it is of considerable value in the prevention of such attacks in the case of individuals who are subject to frequent paroxysms. In my experience quinidin never fails to prevent to some degree the occurrence of these attacks. Usually the dosage can be so regulated as to prevent their occurrence almost entirely. The proper dosage is a matter of trial in each individual. I usually begin with three grains three times a day, lessening the frequency of the dose as time passes without the appearance of the tachycardia. Usually a ration of three to six grains per day is sufficient to either abolish the paroxysms or to make them so infrequent and of such short duration as to be of little consequence.

*Paroxysmal Ventricular Tachycardia*

This type of tachycardia is rare and seldom occurs except as evidence of a serious disturbance of the myocardium. Treatment of the acute attack must take into consideration the underlying cardiac pathology, but in the case of a persistent ventricular tachycardia quinidin may be used in a manner similar to that described above. Occasionally the results are dramatically satisfactory, but in general are not so reliable as in the treatment of auricular tachycardia.

*Paroxysmal Auricular Fibrillation*

Patients with paroxysmal auricular fibrillation, who have no signs of circulatory failure, especially in the absence of valvular disease, are particularly suitable for quinidin therapy since about two-thirds of them may thereby be restored to normal rhythm, many of them to maintain the normal mechanism even without quinidin rations. It goes without saying that possible causes of this disturbance, such as hyperthyroidism, should be searched for and eliminated. The precise dose and frequency of dose is a matter of individual opinion and experience. The drug may be given by vein, but it seems safer and better to use the oral route. Since it seems to be established that the effectiveness of the remedy is dependent upon the total amount in the body at a given time rather than upon the total amount administered over a period of days, I prefer to give, as previously indicated, three grains every hour until some sort of effect is produced. I do not

always interrupt sleep for this purpose. When normal rhythm occurs the drug is omitted. If the auricular fibrillation recurs and normal rhythm is again restored by quinidin, I then give daily rations in an attempt to prevent further recurrences of the arrhythmia. Sometimes it is impossible to succeed in this except by such large daily doses as to produce the unpleasant effects of cinchonism.

#### *Established or Chronic Auricular Fibrillation*

Patients with persistent auricular fibrillation often present contra-indications to quinidin and many others are so well controlled by digitalis that it seems unnecessary to attempt to restore regular rhythm. I have seen patients who were more comfortable when fibrillating with a slow ventricular rate, then when regular with a more rapid and less easily controlled ventricular rate. When no contra-indications exist and it seems desirable to restore normal rhythm by quinidin, the method is similar to that in the case of paroxysmal auricular fibrillation. It should be added that during such radical quinidin therapy, in all cases, the patient should be kept in bed.

#### *Paroxysmal Auricular Flutter*

This type of rapid rhythm often accompanies true myocardial disease and is apt to last longer than the ordinary attack of paroxysmal auricular tachycardia, and is often very difficult to abolish or control. Frequently it is successfully treated by digitalis, which often throws the rhythm into auricular fibrillation which in turn may spontaneously revert to normal rhythm, or, failing that, can be controlled by digitalis. Occasionally, however, quinidin is of the greatest value in the treatment of otherwise intractable instances of auricular flutter. Following is an example of this: a healthy laborer of thirty-five years, with a completely negative previous history, was placing a heavy cake of ice in a refrigerator one day last August when he suddenly felt a sensation as of a "twist" in his chest, followed by feelings of weakness and faintness. He went home to bed and the next day he felt pain in his abdomen, was nauseated and vomited several times. The same day he was admitted to a hospital where his pulse was found to be very rapid and weak, his blood pressure seemed to be about 70 systolic, the abdomen was tender with a smooth liver edge palpable about three fingers' breadth below the costal margin. No other important findings. The man felt very weak and drowsy. During the next

three days he received 4.2 grammes of digitalis without effect on the heart rate or rhythm. At the end of the third hospital day I saw the patient and found a regular heart rhythm, rate 132, synchronous with visible pulsations in the carotid vessels which were overlaid by extremely rapid venous pulsations. I found the blood pressure to be 100 systolic, 60 diastolic. The man was stuporous, hard to arouse, would not eat, took very little fluids, but showed no evidence of circulatory failure except the enlarged liver. The heart seemed slightly enlarged, but no definite evidence of valvular disease was detected. I advised quinidin sulphate by mouth, three grains each hour for six doses, then three grains every two hours until the rhythm or rate changed or toxic signs appeared. During the next forty hours he received eighty-one grains of quinidin, at which time the rate suddenly dropped to 88. Examination by me one week later revealed no signs of heart disease, or of circulatory congestion in the liver. The patient returned to work as a truck driver shortly after and was reported last week as feeling well. I think this was a case of auricular flutter of sudden onset, as a result of physical exertion, occurring in a normal heart, terminated by quinidin therapy.

In patients who are subject to attacks of auricular flutter, daily rations of quinidin are sometimes effective in reducing the duration and number of such attacks.

#### *Prevention of Ventricular Fibrillation*

Fibrillation of the ventricles causes death if it persists for longer than a few seconds. It is said to be the cause of death in a small percentage of cases of coronary thrombosis. It has been suggested that quinidin might be administered routinely to patients with recent coronary occlusion as a possible preventive of ventricular fibrillation. I have had no experience with such a procedure and know of no statistics in regard to it.

#### *Conclusion*

Quinidin sulphate is useful in the treatment and prevention of nearly all of the various types of cardiac arrhythmia. When used with a clear understanding of its mode of action and its dangers, it can be given in much larger dosage than is generally used. In the treatment of acute attacks of arrhythmia it is well to remember that since quinidin is rapidly excreted the amount given in a day or so is much more important than the total amount given over a long period. The fixed daily ration of quini-

din, used in the prevention of arrhythmia, produces its effects rapidly and, therefore, toxic effects are not likely to result from an accumulation of the drug.

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## OBITUARY

William F. Flanagan died February 20, 1934. He was born April 28, 1872, and received his early education in the Apponaug grammar schools and La Salle Academy, Providence. He attended Manhattan College, from which he graduated in 1895 with the degrees A.B., A.M. He graduated in 1900 from the Long Island College Hospital.

Dr. Flanagan began practice in 1900; was Visiting Surgeon to St. Joseph's Hospital from 1903 to 1916, and Medical Superintendent of St. Joseph's Hospital from 1916 to 1920.

He was a Fellow of the American College of Surgeons, the Rhode Island Medical Society, the Providence Medical Association, the American Medical Association, and the Society of Military Surgeons of the United States.

Dr. Flanagan was successively Surgeon Major, Lieutenant Colonel of the First Light Infantry of Rhode Island, and retired in 1923 with the rank of Brigadier General.

During his administration as Medical Superintendent of St. Joseph's Hospital, Dr. Flanagan showed overwhelming zeal in his interest in Hospital affairs, and fairness and liberality in the solution of the innumerable problems that devolve upon such a position.

He was most ardent in his religion, and was a profound student of the Latin classics, in which he was highly proficient.

Dr. Flanagan was admired and is mourned by a very large clientele of discriminating patients and by his professional and clerical associates.

JOHN J. KENNEY, M.D.,  
W. LOUIS CHAPMAN, M.D.

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## SOCIETIES

### PROVIDENCE MEDICAL ASSOCIATION

The regular monthly meeting of the Providence Medical Association was called to order by the President, Dr. Charles F. Gornly, Monday evening, November 5, 1934, at 8:50 o'clock. The rec-

ords of the last meeting were read and approved. An invitation to a clinic day at the Memorial Hospital, Pawtucket, on November 7, was read.

The secretary read an obituary on Dr. William F. Flanagan, and Dr. Charles H. Leonard read one on Dr. Eugene P. King. It was voted to spread these on the records and send copies to the families.

The association having voted the president should appoint a committee to consider improvements in the meeting hall, the following were named: James W. Leech, chairman, John G. Walsh, Harry C. Messinger, William Hindle, William P. Buffum, president and secretary ex-officio.

Dr. Francis Chafee moved that a committee of seven be appointed by the president, himself to be a member ex-officio in addition, to investigate the practicability of founding a Donors' Bureau under the auspices of the association, and if they find it to be feasible, to proceed with the establishment of such a bureau. This was voted and the committee was named as follows: B. Earl Clarke, George W. Waterman, Robert H. Whitmarsh, James Hamilton, Kalei Gregory, Jesse P. Eddy, 3rd, Francis H. Chafee, chairman, and the president of the association.

Dr. Kingman for the Public Relations Committee reported on the meeting held Monday, October 8th, and stated that there would be another meeting or meetings later. He then introduced the following motion which was passed: "Moved that the president of the Providence Medical Association appoint for one year a Public Health Clinic Committee of five members, preferably from members practising outside the City of Providence. This committee to co-operate with the Public Health Clinic Committee of the Rhode Island Medical Society."

Dr. Elihu Wing introduced the following resolution: "That the Providence Medical Association, appreciating the increasing number of school teachers showing undue fatigue and nervous states, wishes to call to the attention of the School Committee of the City of Providence this serious situation of the medical and mental health of many of our school teachers and asks that consideration be given towards improving this situation"—and he moved that this resolution be referred to the Public Relations Committee to further study the problem and co-operate in any way that is deemed wise with the proper school officials. Drs. McDonald, Ruggles and Donley endorsed this and it was so voted.



The first address of the evening was by Henry F. Vaughn, Commissioner of Health of Detroit, Michigan, on "The Family Physician and Preventive Medicine." He first paid a fine tribute to Dr. Chapin. He advocated a plan for the medical participation of physicians doing private practice in Public Health Service. To teach him to practice Public Health in his office would benefit the public. This does not mean the elimination of a governmental Public Health Service, for it must be officially supervised. To suggest how this can be developed he outlined the Wayne County Plan. This has to do only with diphtheria, but it serves as an entering wedge. The giving of Schick tests, toxin, antitoxin and other procedures used in the modern methods of combatting diphtheria are all done by practicing physicians for regular fees, the Board of Health remunerating them at reduced fees for cases unable to pay. With slides he outlined the progress of this work and explained their methods of attaining publicity, educating the physicians and allied groups as nurses, social groups, teachers, etc.

Dr. John E. Gordon, Epidemiologist, of the W. K. Kellogg Foundation, spoke on "Newer Aspects in the Control of Communicable Diseases." He has recently traveled through Europe, and he outlined the different diseases as they occurred and as they are handled in the European countries.

Dr. Richardson discussed the papers.

The meeting adjourned at 11:00 P. M. Attendance 189.

Collation followed.

Respectfully submitted,

PETER PINEO CHASE,  
*Secretary.*

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## ANNOUNCEMENT

Application blanks are now available for space in the Scientific Exhibit at the Atlantic City Session of the American Medical Association, June 10-14, 1935. The Committee on Scientific Exhibit requires that all applicants fill out the regular application form and requests that this be done as early as convenient. Applications close February 25, 1935.

Persons desiring application blanks should address a request to the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago, Illinois.

## NOTICE

To insure prompt attention, the readers of this JOURNAL are advised: That matters pertaining to advertising, mailing and accounts should be addressed the Business Manager, Dr. C. W. Skelton, 106 Francis Street, Providence, R. I.

Other matters, books for review, notices, manuscript, letters, reports of meetings, and all affairs of literary nature should be addressed to the Editor, Dr. Frederick N. Brown, 309 Olney Street, Providence, R. I.

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## THE FIRST THANKSGIVING PROCLAMATION

Few Americans know that the original Presidential Thanksgiving Proclamation was lost for over a hundred years; that it was found at an auction sale in 1921; that it was bought by the Library of Congress for \$300.00; and that it now reposes in the archives of that institution—one of the most valuable documents in the world. The Division of Information and Publication of the George Washington Bicentennial Commission, in a statement issued today, relates the story of the lost proclamation.

On September 25, 1789, Elias Boudinot introduced the following resolution in the House of Representatives:

"Resolved, That a joint committee of both Houses be directed to wait upon the President of the United States, to request that he would recommend to the people of the United States a day of public Thanksgiving and prayer, to be observed by acknowledging, with grateful hearts, the many signal favors of Almighty God, especially by affording them an opportunity to establish a Constitution of government for their safety and happiness."

Harmless as this resolution seems, there were objections to it. In reading the Annals of Congress of that period, we find that Representative Aedanus Burke of South Carolina thought we should not mimic Europe "where they made a mere mockery of thanksgiving."

Representative Thomas Tudor Tucker, also of South Carolina, argued that it was not the business of Congress to ask for a national day of Thanksgiving.

"They (the people) may not be inclined to return thanks for a Constitution until they have

experienced that it promotes their safety and happiness."

These objections, however, were overruled; the resolution was passed and sent to the Senate for concurrence. The Senate approved and appointed its committee to wait on the President. The joint committee was made up of Ralph Izard of South Carolina and William S. Johnson of Connecticut, from the Senate; Elias Boudinot of New Jersey, Roger Sherman of Connecticut, and Peter Sylvester of New York, from the House.

Washington complied with the request and on October 3, 1789, issued his proclamation, calling for a National day of Thanksgiving on Thursday, November 26.

And then the document dropped out of sight. It apparently was misplaced or attached to some private papers in the process of moving official records from one city to another when the Capital was changed. However, it happened, the original manuscript was not in the official archives until 1921 when Dr. J. C. Fitzpatrick, then Assistant Chief of the Manuscripts Division of the Library of Congress, and now Editor of the forthcoming George Washington Bicentennial Commission series of Washington's Writings, "found" the proclamation. It was at an auction sale being held in the American Art Galleries of New York City. Dr. Fitzpatrick, an expert in Washingtonia, examined the document and found it to be authentic. It was written in long hand by Wm. Jackson, Secretary to President Washington at the time, and was signed in George Washington's bold hand. Dr. Fitzpatrick purchased the document for \$300.00 for the Library of Congress, where it is now kept as a treasure. And no amount of money could remove it.

The original Proclamation of Thanksgiving, and, indeed, the first Presidential proclamation ever issued in the United States, reads as follows:

"By the President of the United States of America.

"Whereas it is the duty of all nations to acknowledge the providence of Almighty God, to obey his will, to be grateful for his benefits, and humbly to implore his protection and favor—and Whereas both Houses of Congress have by their joint committee requested me 'to recommend to the People of the United States a day of public thanksgiving and prayer, to be observed by acknowledging with grateful hearts the many signal favors of Almighty God, especially by affording them an opportunity to

establish a form of government for their safety and happiness.'

"Now, therefore, I do recommend and assign Thursday, the 26th day of November next, to be devoted by the People of these States to the service of that great and glorious Being who is the beneficent Author of all the good that was, that is, or that will be—That we may then all unite in rendering unto him our sincere and humble thanks—for his kind care and protection of the People of this country previous to their becoming a Nation—for the signal and manifold mercies and the favorable interpositions of his providence, which we experienced in the course and conclusion of the late war—for the great degree of tranquility, union, and plenty, which we have since enjoyed—for the peaceable and rational manner in which we have been enabled to establish constitutions of government for our safety and happiness, and particularly the national One now lately instituted—for the civil and religious liberty with which we are blessed and the means we have of acquiring and diffusing useful knowledge; and in general for all the great and various favors which he hath been pleased to confer upon us.

"And also that we may then unite in most humbly offering our prayers and supplications to the great Lord and Ruler of Nations, and beseech him to pardon our national and other transgressions—to enable us all, whether in public or private stations, to perform our several and relative duties properly and punctually—to render our national government a blessing to all the People by constantly being a Government of wise, just, and constitutional laws, discreetly and faithfully executed and obeyed—to protect and guide all Sovereigns and Nations (especially such as have shown kindness to us) and to bless them with good Government, peace, and concord. To promote the knowledge and practice of true religion and virtue, and the increase of science among them and us—and generally to grant unto all mankind such a degree of temporal prosperity as he alone knows to be best.

"Given under my hand at the City of New York the third day of October in the year of our Lord 1789.

(signed) George Washington"

Celebration of Thanksgiving Day in America can be traced back to the earliest days of the Massachusetts Bay Colony. From there the custom spread to all parts of the United States.



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